TELEPHONY

The Journal of the Telephone Industry

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VOLUME 119

AUGUST 24, 1940

NUMBER 8

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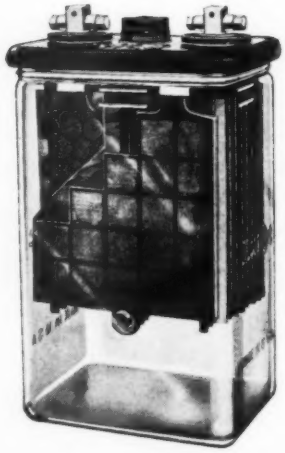

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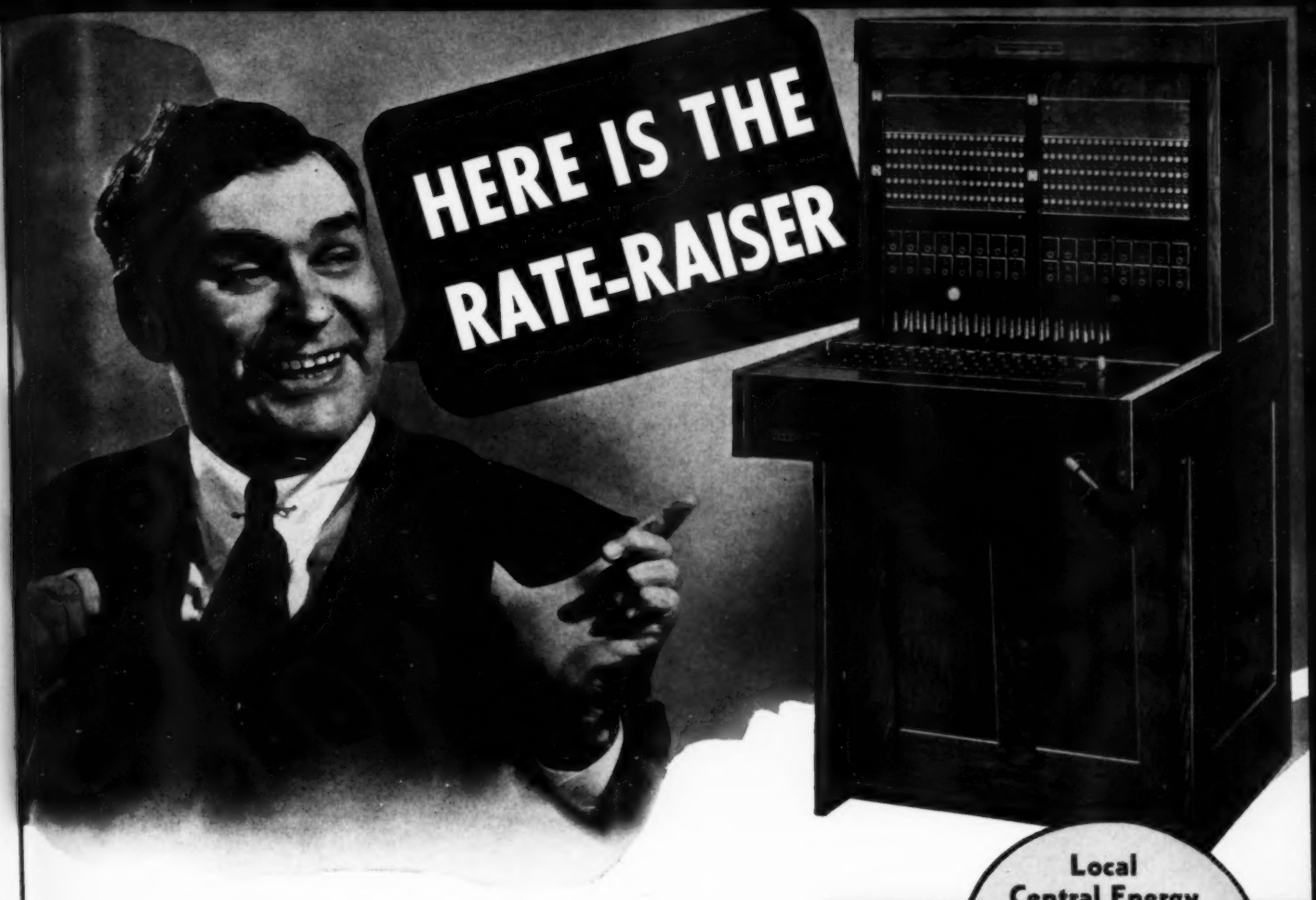

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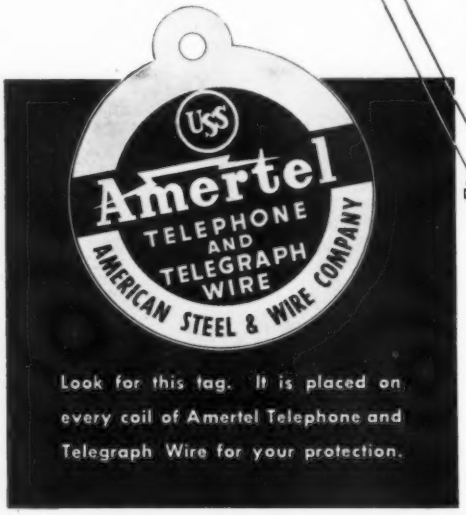

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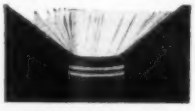

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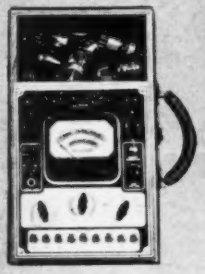

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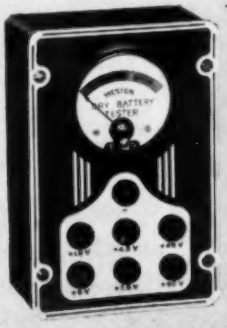

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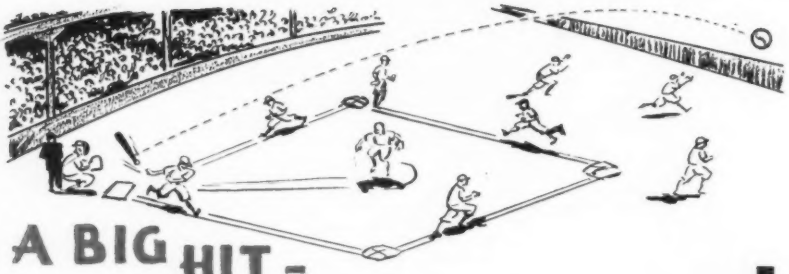

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IN THIS ISSUE

IT SOUNDS LIKE STATIC 9
By L. S. Uphoff

THE OPERATORS' CORNER 13
By Mayme Workman

IN THE NATION'S CAPITAL 14
By Francis X. Welch

MIDDLE GROUND 16
By Anne Barnes

HUMAN RELATIONS INFLUENCED BY MANY FACTORS 17
By Gordon Sand

A CABLEMAN TALKS OF THE ART OF SOLDERING *(Second Article)* 20
By John Bonert

HERE AND THERE IN THE FIELD 22

OBSTACLES ALONG LIFE'S PATHWAY 24
By Anne Barnes

THE MANUFACTURERS' DEPARTMENT 28

COMMISSION AND COURT ACTIVITIES 29

"*TELEPHONY'S*" ENGINEERING DATA 32
By B. C. Burden

Best Story of the Week—What's Yours 12
Obituaries 26
Personal Items 27
A Bit of Correspondence 33

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Telephony

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IT SOUNDS LIKE STATIC

By L. S. UPHOFF

PREVENTIVE MAINTENANCE on jacks and plugs is important if complaints of "noisy connections" are to be kept to a minimum. In this comprehensive study the author presents methods for making overall tests of plugs and jacks. The jack gauge described is said to eliminate many of the disadvantages found where a minimum plug is used

IN THE EARLY days of telephony, maintenance consisted largely in clearing trouble. With the gradual introduction of sensitive relays and other mechanical equipment an attempt was made to practice preventive maintenance. Routine testing was begun and a dual set of tolerance limits was established for most equipment, i.e. test limits and re-adjust limits. The latter were more strict than the former because it was desired, when the expense of making a re-adjustment was incurred, to bring the device near the middle of the tolerance range rather than merely within the range.

The jack and plug were two of the earliest devices developed after telephones were arranged in "systems" where one subscriber could be connected to any other. As early as 1887 the idea of building jacks in strips was patented and used. In spite of this early beginning, it is a curious fact that no satisfactory testing facilities for jacks and plugs were available until recent years. There were gauges for determining when the dimensions of certain parts reached tolerance limits but an overall service test which would insure good contact between every plug and any jack for which it was designed was not made.

In 1930 the Western Electric Co. brought out an indicator type gauge, shown in Fig. 1, for making an overall test of plugs. The lower view shows the gauge with the cover removed, thereby disclosing the internal mechanism. The hole through which the plug is inserted simulates a worn jack sleeve. This hole is located in an eccentric, hardened steel bushing which may be rotated to any desired position and then clamped in place. A steel test plug for testing and setting the gauge is also provided.

In practice the test plug is inserted as in the lower view in Fig. 1 and the eccentric bushing rotated until the indicator is on the right hand (when viewed from the end in which the plug is inserted) red line of the scale as shown. The eccentric bushing is then clamped and the gauge is properly set for use. This adjustment compensates for manufacturing variations or wear of the parts.

After the gauge has been thus set,

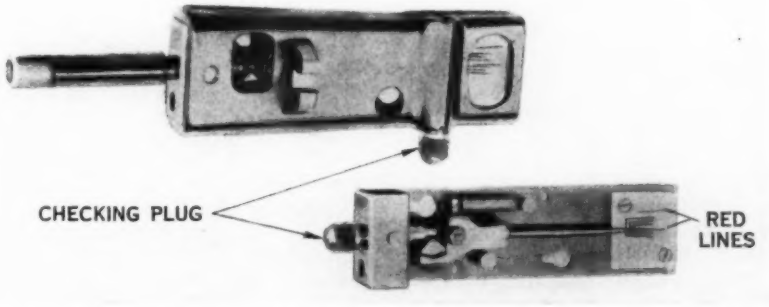

Fig. 1. An indicator-type gauge for making an overall test of plugs. The lower view shows the gauge with the cover removed, disclosing the internal mechanism. The hole through which the plug is inserted simulates a worn jack sleeve. This hole is located in an eccentric, hardened steel bushing which may be rotated to any desired position and then clamped in place.

service plugs may be tested by inserting them in the same manner as the test plug and then rotating through one complete revolution. If the indicating needle reaches or passes either one of the red lines during the rotation of the plug, the plug should be straightened or rejected. The additional lines on the scale help to determine whether straightening or replacement is indicated. An additional hole is provided in the end of the gauge for straightening tips of plugs.

The parts of the gauge are insulated so that the elements of the plug will not be short-circuited during test and the gauge may be used on plugs in service. The gauge is made in two sizes—one for the small type plug (sleeve diameter 0.206 inch) and one for the large type (sleeve diameter 0.250 inch). Since this gauge takes into account both wear of the plug parts and bending of the plug assembly, its use provides a genuine overall service test.

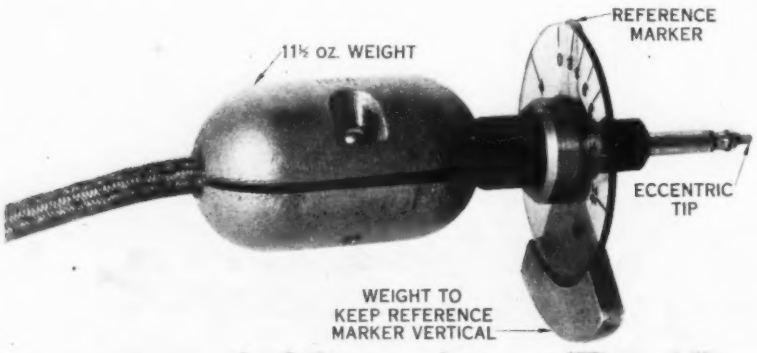

Fig. 2. A jack gauge developed by the author of this article. It consists of a plug which, except for the tip, simulates a service plug with minimum dimensions. The tip is cylindrical rather than spherical and is located eccentrically with respect to the plug.

For testing jacks a minimum plug, made of steel to reduce wear, has been used. The disadvantage of this is that the plug does not differentiate between a jack which is well inside the tolerance limit and one on the verge of failure; that is, the test is not quantitative. Since there is no adjustment on a minimum plug, rather wide differences result from manufacturing variations. It would be possible, of course, to use a series of plugs of graduated sizes to secure a quantitative test but this would make the testing procedure lengthy and expensive.

To overcome these disadvantages the jack gauge shown in Fig. 2 has been developed by the writer. It consists of a plug, which, except for the tip, simulates a service plug with minimum dimensions. The tip is cylindrical rather than spherical and located eccentrically with respect to the center line of the plug. A transparent scale is attached as shown, together with a gravity-operated reference marker for providing a vertical reference mark directly above the center of the plug. An 11½-ounce weight is clamped to the butt of the plug to simulate the maximum pull of a cord and cord weight. This also serves as a convenient handle.

A standard switchboard cord is attached to the plug and a head receiver with a 10,000-ohm resistance in series is connected across the tip and ring to indicate when the eccentric tip of the gauge makes contact with the tip spring of the jack. Instead of the head receiver a small, inexpensive voltmeter (such as Readrite) may also be used if a visual indication is desired. The writer has used a small panel type meter (50-volt scale) which is little larger than a head receiver and costs less than $1.00.

Unless the internal resistance of the meter is 10,000 ohms or more, an external resistance should be used to prevent bringing in the line signals and to avoid interference with conversations on a busy jack. With 10,000 ohms the "click" caused on a busy line is so slight that the interference is negligible. The writer has tested thousands of jacks, a proportion of which were busy, but has never heard a comment in regard to interference from a user.

The scale of an eccentric tip gauge designed for a small type jack (internal sleeve diameter 0.209 inch) is shown in Fig. 3. The most important point on the scale is the red line designated as 12 because the rest of the scale is calibrated from this point. To locate the red line on the transparent scale the indicating plug gauge is held on edge as shown in Fig. 1 so that the wedge-shaped element (called an "anvil"), which engages the tip of the plug, is at the bottom. This simulates the position of the tip spring in a modern jack.

The eccentric tip gauge is then inserted through the hole in the steel bushing and turned until the indicating needle is exactly over the right-hand red line. (The needle should preferably be observed with a magnifying glass.) When this position is obtained, a red line is placed on the transparent scale directly over the line on the reference marker making sure that this marker is exactly vertical.

A more accurate method of locating the red line on the transparent scale and also of calibrating the remainder of the scale may be carried out as follows:

An indicating plug gauge with cover removed is mounted on a suitable backboard or mounting plate. The indicating needle is removed and replaced by another needle 9⅞ inches long, not including that part of the threaded portion which is hidden within the needle holding member. With this arrangement a movement of 0.001 inch of the anvil should result in a movement of about 1/32 inch at the end of the needle so that an ordinary steel scale graduated in 32nds of an inch may be used as a scale for the improvised calibrating or master gauge.

The "red line" is located by inserting the steel checking plug into the calibrating gauge and carefully noting the position of the needle or pointer on the steel scale. By substituting the eccentric tip gauge for the checking plug and turning the gauge until the pointer of the calibrating gauge is exactly at the position noted when the checking plug was in place, the "red line" may be located. The remainder of the scale may then be calibrated in thousandths of an inch with reference to the red line.

The point at which the eccentric tip is in its maximum upward position may be marked "N," signifying "equivalent to new." The diametrically opposite point at which the eccentric tip is in its lowest posiion may be marked "BR," signifying "beyond range." It should be noted that the scale divisions will not be equally spaced because the vertical displacement of the eccentric tip is not the same at all points on the scale for a given angle of rotation.

Instead of arranging the scale as shown in Fig. 3 it may, of course, be marked in any desired manner.

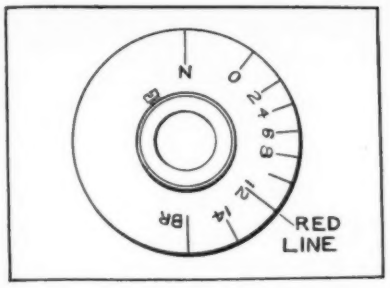

Fig. 3. The scale of an eccentric tip gauge designed for a small type jack (internal sleeve diameter about 0.209 inch).

For example, the red line may be designated "zero" and the scale made to read in both directions from this point. The reading would then give directly the amount of "follow" of the tip spring with reference to a limiting plug if the reading were to the left of the red line. On the right side of the red line the reading would give the amount by which the tip spring was beyond the limit.

To avoid variations caused if the tip of the gauge is not exactly cylindrical or if the axis of the tip is not exactly parallel to the axis of the gauge, it is important that the eccentric tip gauge be not moved longitudinally during calibration. This may be readily accomplished by inserting the gauge through a small washer of the proper thickness so that the "anvil" contacts the center of the cylindrical part of the tip.

The foregoing-mentioned variations in the cylindrical tip should, of course, be kept as small as possible to avoid the introduction of serious inaccuracies because the tip springs of jacks under test will not always contact the eccentric tip at its center. The primary reason for making the tip of the gauge cylindrical, rather than spherical as in service plugs, is to obtain a true reading regardless of variations in the distance from the face of a jack strip to the contacting point of the tip spring.

It should be realized that the eccentric tip gauge, as described, was designed for testing jacks with both tip and ring springs located at the bottom. With any other spring arrangement the position of the scale with reference to the eccentric tip must be changed accordingly; and if the tip spring is not at the bottom, the weight serves no other purpose than as a handle.

The gauge is particularly useful for the small type jack, having an internal sleeve diameter of about 0.209 inch when new, because this type suffers a greater degree of wear with a given usage than the large jacks.

Instead of making the eccentric tip gauge of steel the writer has found it entirely feasible to convert an ordinary brass service plug into a gauge by turning it down to the required dimensions and chromium plating the exposed parts to minimize wear. (If the tip of the plug is removable it is well to remove it and the dead collar, turn the collar down to the correct outside diameter and plate it separately. Otherwise, it will remain unplated and wear more rapidly than the other parts.)

Select a plug which will run reasonably true when held in the chuck (preferably with four independent jaws) of a lathe. Turn the sleeve diameter down to the correct dimension as given in the accompanying table and make the tip cylindrical with the diameter shown. Then cause the entire plug to run eccentrically by moving two diametrically opposite jaws of the chuck. The approximate amount of eccentricity should be as follows: Gauge for small type jacks, eccentricity 0.016 inch; gauge for large type jacks, eccentricity 0.020 inch.

After this is done, turn the cylindrical tip down just sufficiently to remove the eccentricity with respect to the lathe tool. To test the range of the gauge (before removing it from the chuck), slip an indicator type plug gauge, Fig. 1, on it and turn the lathe slowly. The indicator should move from the extreme right-hand black line to an appreciable distance to the left of the right-hand red line. The red line on the transparent scale will then fall near one end of the range as in Fig. 3.

For plating, attach wires to the screw terminals and the sleeve, ask the plater to immerse only to the point where the fibre shell begins and to use a cylindrical lead anode to secure uniform deposition of the chromium. After plating, the gauge may be polished in a lathe with French emery paper folded over a flat file.

The fibre shell of the plug should be discarded and a bakelite shell, $\frac{5}{8}$ inch in diameter at the larger end and $\frac{7}{16}$ inch in diameter at the smaller end, should be made. The brass screw used to hold the fibre shell to the plug should also be discarded and a longer, flat-headed (to prevent play) iron screw substituted.

The new shell should have a brass ferrule at the center (force fit) on which the brass collar of the scale may be clamped with a set screw and the reference marker with its weight may be loosely hung. A groove in the ferrule and a snap ring will keep the marker in place. The scale may be any reasonable size but the writer prefers one $2\frac{1}{8}$ inches in diameter.

Where the facilities for making such a gauge are not at hand, no difficulty should be experienced in securing a competent mechanic to make it from the foregoing description and the illustrations.

Use of the Eccentric Tip Gauge

In using the gauge the writer prefers the following procedure: Hold the gauge in such a position that the eccentric tip is in its maximum upward position. If the scale is arranged as in Fig. 3 the line marked "N" will then be over the reference marker. Insert into the jack and note whether the tip spring makes contact with the eccentric tip when the $11\frac{1}{2}$-ounce weight is released. (It is assumed that the jack is of the type with tip and ring springs located at the bottom.)

If contact is made in this position, the jack is in good adjustment and no further test need be made. If contact is not made, rotate the gauge until contact is established. Then rotate in the reverse direction until the point at which the eccentric tip just fails to make contact is found. Record the scale reading found over the reference marker, making sure that the marker is vertical.

If the gauge is rotated through 180 degrees without making contact, lift upward on the $11\frac{1}{2}$-ounce weight to make sure that there is no open circuit other than the failure to make contact. This condition is designated "BR" and indicates a very poor jack adjustment.

	Diameter of Sleeve and Dead Collar in Inches	Tip Diameter in Inches Before Being Made Eccentric
Gauge for testing small type jacks (0.209 inch sleeve)	0.203 maximum 0.202 minimum	0.116 maximum 0.115 minimum
Gauge for testing large type jacks (0.252 inch sleeve)	0.246 maximum 0.245 minimum	0.136 maximum 0.135 minimum

Table of gauge dimensions

While this testing procedure may sound lengthy and complicated when described in words, it is really very fast in practice—much faster than a minimum plug test—especially if a goodly proportion of the jacks are in good adjustment.

The data recorded in such tests indicate the exact adjustment of every jack—whether it is good, fair, on the point of failure or beyond the failure point with reference to a minimum plug. After spending a few hours at a board with this gauge and submitting the data to the wire chief, the writer often hears the exclamation: "That tells me more about my jacks than I have ever known!" And the saving in maintenance effort is enormous.

With a minimum plug, all of the jacks are tested over and over to pick out the few which cross the tolerance line between tests. The test is so monotonous that on a large board, men get mental doldrums and pass over jacks which do cut out. With the quantitative test, a reading is obtained on every jack, and the reading may be checked at any time. The sensitivity and accuracy are such that the writer has determined the amount of wear occurring on busy PBX trunk jacks (small type) on a "B" board over a period of three months.

The eccentric tip gauge is also invaluable in checking jack springs *after* readjustment. A minimum plug merely indicates that a jack spring is within a certain limit. A maintenance man cannot tell whether it is barely within the limit or well within. The writer has checked a large number of jacks after readjustment by many different men and found that a substantial percentage was just barely within the limits. The natural tendency is to be circumspect in lifting a spring because, if a "butting" condition results, it is difficult to bend the spring down again. Of course, an adjustment barely within the limit means that the jack will require another adjustment much sooner than should be necessary.

The writer has found that maintenance forces frequently do not realize the inter-relation of the limits used on plugs and those used with jacks. If a jack spring makes contact with the eccentric tip when the reference marker is on the red line, it would just make contact with a plug which tested on the red line of a gauge such as shown in Fig. 1, but there would be no "follow" in the spring. This is an undesirable condition. For good maintenance, the "follow" should be not less than 0.010 inch. This means that all jacks should have a reading at least 0.010 inch to the left of the red line on the eccentric tip gauge.

The writer feels that if a quantitative gauge is available, jack maintenance is far more satisfactory than plug maintenance, because a good adjustment is so much more lasting. A maintenance man may have every plug in good condition. The next moment an operator may bend a plug and place a potential trouble at the position. If every jack has a follow of at least 0.010 inch, however, the maintenance man may virtually forget about his jacks for several years. And if jacks have such an adjustment, a substantial bending of plugs can be tolerated.

Nothing has been said about gauging jack sleeves. This may be done in conjunction with eccentric tip gauge tests if desired. However, if the springs are kept in good adjustment, expensive sleeve replacements are unnecessary until they become so worn that breakage becomes likely.

The gauge dimensions given herein apply to jacks and plugs having (when new) the dimensions indicated. For testing equipment to be used with jacks having other dimensions, the gauge dimensions should be modified proportionately. Perhaps it should be pointed out that there is no mathematical or other law governing the location of the "red lines." Anyone may set these red lines (within reasonable limits) for himself so long as the line for plugs and the line for the jacks, with which the plugs are to be used, are inter-related.

The Value of Preventive Maintenance

What is the value of preventive maintenance on jacks and plugs from the standpoint of service? Studies made by the writer indicate that poor jack adjustments seldom cause cut-outs but they commonly cause noise due to pressureless contact. From a large number of jack tests, two groups were made up. Group 1 consisted of answering jacks in excellent adjustment. Group 2 consisted of the same number of jacks with poor spring adjustment.

When the subscribers were interviewed, there were no complaints of noise in Group 1, while one-third of those in Group 2 complained of noise at times. The comment of a woman in Group 2 with a residence telephone was indicative:

"Sometimes," she said, "my telephone is all right. But often it sounds like static."

▼ ▼

Best Story of the Week —What's Yours?

Recent investigation of the owner of the last name in the Vancouver, British Columbia, Canada, telephone directory revealed that "John Zypper" is not a man—but a dog.

According to a local newspaper columnist and sports writer, a Bill de Macedo was batching with some friends last year and desired to take telephone service. But the boys—there were three of them—did not want any one name listed in the book. So they decided to adopt a community name. At their house was a dog named "Zypper," and in a moment of inspiration they decided that "Zypper" would provide the telephone listing. Accordingly John Zypper was listed in the telephone book; the boys were satisfied and the telephone company can rightfully claim that its Vancouver directory "closes with a zipper."

FRONT COVER

A human fly appears to be waving to the cameraman, in the front cover illustration, but in reality it is a cableman "riding" the telephone cable—high in the air—between Los Gatos and Watsonville, Calif., for the Pacific Telephone & Telegraph Co.

Telephone employes in their everyday work substantiate their reputation for being courageous and dependable. Certainly, riding a cable to search for possible sources of trouble carries a responsibility, yet to the cableman in the photograph this is all in the day's work. But it is easily recognizable that the performance of such a task requires a highly trustworthy and level-headed employe.

Illinois Association Schedules Four District Meetings

Information on tried methods of furnishing the best possible service and ways of solving the most difficult telephone management problems await those who attend the district meetings of The Illinois Telephone Association, announces Secretary A. J. Parsons.

The first four district meetings will be held as follows: September 12, at St. Jacob; September 17, White Pine State Park, near Pole in Ogle county; September 19, Starved Rock State Park, and September 24, Farmington.

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The Operators' Corner

SWITCHBOARD markings are discussed in this first article of a series. No. 414

By MAYME WORKMAN

Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

IF ALL THE signs, traffic signals and guide posts were removed from our streets and highways, travelers would be confused and, in many instances, would arrive at a wrong destination. This frequently happened in the days when we traveled on dirt roads and signs were not in use to guide the traveler on his way.

In many central offices, the "Highways of Speech" are still being traveled on a "dirt road" basis because proper switchboard markings are not being used to guide the operator in assisting the customer, traveling via the voice highway, to reach the desired destination. Unlike the traveler on the dirt road, who eventually reached some destination, the traveler on the voice highway, in some instances, reaches no destination at all in cases where the operator rings on a vacant line.

If all of the traffic signals and signs used in towns, cities and states in the United States were uniform, it would be a great aid to the traveler driving from city to city and state to state. Likewise, uniform switchboard markings would be helpful to telephone operators when transferred to another exchange or when seeking employment in a different central office. However, due to the various types of switchboards in use, markings are designed to meet the requirements of each particular type of equipment. Colors used for specific conditions on all types of equipment are as nearly uniform as possible.

In Illinois we have what is termed "Standard Switchboard Markings" and we are constantly striving to interest and encourage telephone companies in adopting the use of these markings.

In order that a switchboard may be properly marked, changes made in markings, when necessary, and that markings may be removed when they have served their purpose, certain specific material is required as outlined in the following:

PAINT—Colors used are white, red, green, yellow and blue. This paint can usually be purchased in tubes, already mixed. Paint should be a quick drying quality of the type designed for fine automobile finishing. Shades selected should be light enough to show up well on the switchboard such as chrome yellow, light emerald green, carmine red, and a deep shade of blue. Flake white is also used.

SANDPAPER—No. 000.

INK—Higgins black drawing ink and green drawing ink (a ¾-ounce bottle of each).

BRUSH—No. 3, round red sable brush.

GLASS JARS—4 or 5, one-ounce squat opal glass ointment jars (number depending upon the colors of paint required). This equipment is used in mixing or thinning paint, when necessary. As a substitute for the glass jars, it was observed in one exchange that a six-cup tin muffin pan was effectively used for this purpose.

ALPHA DICHLORHYDRIN — A two-ounce bottle (solvent for removing paint markings).

QUICK DRYING VARNISH—For thinning paint.

TURPENTINE—For cleaning brushes only.

SIGNAL PLUG HOLDER—A holder in which signal plugs are placed while they are being prepared for use.

Care and Use of Switchboard Marking Equipment

PREPARING SIGNAL PLUGS—These plugs are used in transferring calls and for various other purposes. Before writing on a signal plug, the glossy surface should be dulled by using No. 000 sandpaper. Entries should be made with Higgins India ink.

REMOVING PAINT MARKINGS—Care must be taken when removing paint markings so as not to interfere with the paint in the dots in subscribers' and out trunk multiple at switchboards having this type of equipment. A suitable scraping tool may be used when removing underlinings from the multiple grooves. Care must be taken when using a tool so as not to injure the surface of the jack strip or jack mounting.

REMOVING MULTIPLE MARKINGS ON A WHOLESALE BASIS—The solvent "alpha dichlorhydrin" is recommended for this purpose. The solvent should be applied with a piece of cloth and then after a few minutes, the surface should be gone over again, this time using a rubbing action. It may be necessary, in some cases, to supplement this by using a knife or similar tool. *Do not use* turpentine, benzine or similar solvents for removing switchboard markings.

CARE OF PAINT BRUSH—The brush should be thoroughly cleaned with turpentine *before being put away.* Cloths or paper which contain turpentine should be thoroughly dried before disposing of them in the waste basket or placing them in a desk or cabinet in order to avoid fires, combustions, etc.

In the second series on the subject of switchboard markings, we shall outline "The Use of Multiple Markings for Common Battery Manual Offices."

Questions from Illinois Operators

1. Do you print or write "WH" on back of ticket?
2. Is "UN" a chargeable report?
3. Are we permitted to use toll circuit to obtain a telephone number from a distant point? (The customer does not wish to place a call.)
4. Should a report charge be made on a call which has been covered by an In call?
5. On a "room tel. da," should the called party be paged without the calling party's consent?

The answers to these questions are presented on page 26.

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Delayed Rains Affect Nebraska Business Outlook

Recent rains have rescued part of the corn crop in favored sections of Nebraska, but the state agricultural department experts say that the rains came too late to do much more than indicate about a third of the normal crop. It is estimated that corn and wheat crops in Nebraska will be about the same as last year and, as prices are not very much different, farm income will be about at the same level.

Telephone company executives who were cheered by conditions the first five months of the year have been compelled to reconcile themselves to a repetition of last year's business experience.

in the Nation's Capital

by Francis X. Welch

Special Washington, D. C., Correspondent for TELEPHONY

SENATE committee is expected to confirm nomination of Commissioner Brown to FCC, after discussion of RCA trust suit settlement. . . . "Slow down" strike of Postal Telegraph employes in New York and Chicago of short duration. . . . In proposed order in Pacific T. & T. Co. interstate rate case, FCC indicates its trend towards uniform toll rate set-up

AS INDICATED in this department last week, it looks as though the great "RCA scandal" before the Senate interstate commerce committee is likely to blow itself out without any more damage than a few aspersions cast upon the professional reputations of certain lawyers and a few missed pay checks by the unfortunate Commissioner Brown, who has been caught in the position of the innocent by-stander.

When the storm broke about the ears of the Radio Corp. of America, it did so rather unexpectedly and in a strange forum; namely, an otherwise routine committee hearing on the qualifications of Commissioner Brown to succeed himself as a member of the FCC. As a result of the delay in confirmation of his nomination, Commissioner Brown has been unable to function in his official capacity. This is the explanation of why Commissioner Brown will miss out on at least two pay checks.

However, the administration Senators decided to let the Republican Senators talk themselves out and the eventual confirmation of Commissioner Brown is almost certain. Republicans would like to torture the RCA scandal charges into a full-fledged congressional investigation of the FCC but the administration is taking no chances on such a development during the election year.

But this does not mean that satisfactory explanations have been forthcoming to the charges made at the Brown hearings. The various lawyers involved have succeeded in playing a game of "Button, button, who's got the button?" in passing around responsibility for alleged payment of fees for variously described legal services back in 1932. Probably no one will be able to pin anything on the elusive disciples of Blackstone.

But there is that little matter of the court clerk of the federal district court of Wilmington, who is said to have received $15,000 for obtaining a postponement of the government's anti-trust suit against RCA in 1932. The court clerk denied receiving any such money, but an inventory of his estate reveals an affluence considerably beyond what would ordinarily be expected of an official receiving a fairly modest stipend of less than $5,000 a year.

Furthermore, this clerk admitted taking a trip to New York to confer with a former Republican Senator, who was acting as attorney for RCA —the purpose of the visit being to discuss RCA's anti-trust case pending before the federal district court. Such conduct on its face was irregular, to say the least. But this is hardly enough to start a congressional investigation.

President Sarnoff of the RCA put in some pretty uncomfortable moments explaining past lobbying activity of his corporation and the "buying off" of its more articulate critics on the Washington scene. However, if Congress started out to investigate every corporation that has indulged in lobbying in the nation's capital within the last eight years, it certainly would have a prodigious job cut out for itself.

Summing up, the net effect of the "RCA scandal" will probably be an informal investigation by the Justice Department into the alleged irregularities in the federal district court in Wilmington, Del., and possibly into the affairs of certain members of the Bar. RCA will probably walk the straight and narrow from now on with respect to lobbying and a more enlightened public relations policy.

And the FCC, which avoided being dragged into the expose to any extent, will store up in its mind all the things that have been said about RCA and one or two things that were said about the A. T. & T. That will be about all. Under other circumstances there might easily have been a congressional investigation of both RCA and FCC. But not this year. Both Congress and the administration have much more important fish to fry.

IT WAS the erudite Mr. Dooley who once observed that his political arguments with the rest of "the boys" at club meetings always seemed to be "more convincing" when he emphasized his remarks by brandishing a fine fat blackthorn shillalah. The tactics employed last week by the American Communications Association (CIO) in negotiations for a renewal of its bargaining contract with the Postal Telegraph System seems a good deal like arguing with a shillalah in one hand.

The ACA membership in New York and Chicago began on August 14 a "slow down" strike. Certain operators continued at their post but

XUM

saw to it that only one-half, or less, of the usual number of messages were handled. In no time at all the dispatches began to pile up, and traffic began to get out of hand.

In this case the management of the Postal Telegraph System acted promptly. It informed the ACA that the bargaining contract between them which expires at the end of next month is still in force. Therefore, the "slow down" strike constituted a violation of the contract which would, under the simple law of contracts, relieve the management from its obligation to live up to the bargaining provisions.

This brought the ACA back into line in short order and the "slow down" strike ended the following day. But not before Army and Navy observers here in Washington took note of the situation with an eye to national defense possibilities in the future.

Like the term "sabotage" which took its name from the custom of dissatisfied French workers in "accidentally" letting a wooden shoe *(sabot)* fall into machine gears and other places where it would do the most damage, the "slow down" strike is a foreign importation. It is communistic in origin and has since been a favorite labor war device of that element.

Disgruntled Russian workers and peasants resorted to a passive form of resistance under the tyranny of the Czars. But students of labor history trace the first organized "slow down" to Magyar workers and peasants back in the bloody days of 1919 when Bela Kun was trying to spread bolshevism throughout the Balkans.

THE STRATEGIC value of the "slow-down strike" is that, first of all, the strikers remain at their posts and continue to draw pay, frustrating any attempt by the management to displace them with more willing workers. Another strategic advantage of the "slow down" is that a mere handful of organized strikers can disrupt the coordination of an industrial system to such an extent that a great preponderance of unaffected and willing workers might just as well be traveling at half-speed along with the strikers.

This makes the "slow down" a useful weapon in the case of unions which have only succeeded in organizing a small fraction of industrial personnel and seek through this means to impose their organization upon the majority. Despite such advantages, responsible unions in the United States have disavowed and cast aside the "slow down" strike as an un-American device—along with its close relation, the "sit down" strike.

A few unions affiliated with the American Federation of Labor experimented with it during some strikes a few years ago as a protest against alleged "speed up" methods practiced by management, but during recent years it seems to be practiced almost exclusively by a few of the CIO affiliates of which the American Communications Association is one. The favorite spot for the "slow down" strike is during the pendency of collective bargaining negotiations. It is supposed to act as a sort of shillalah that will make management "see the light" more quickly than otherwise.

But what Army and Navy intelligence officers would like to know is: What protection has the national defense against such methods in vitally important industries? Under the National Labor Relations Act as presently drawn, and the National Labor Relations Board as presently constituted, there would seem to be absolutely no protection, unless it could be conclusively shown that such a strike were part of a conspiracy to injure defense operations of the United States government.

Because certain units of the CIO are known to be heavily invested with communistic elements, and because communists have a clever way of disguising their ideological and political activities, under the protective coloration of labor disputes, there is real ground for concern here.

It is hard to tell just what all this will add up to in terms of actual results, but it is your correspondent's conviction that a plan will be forthcoming at the next session of Congress to place the industrial relations of all industries engaged in vital national defense work under

LAUGHING TOWERS
BY SIMS and LEE
"SURE LOOKS LIKE A SCORCHER TO-DAY, BILL, DOSEN'T IT?"
REPAIR SERVICE
"MR. PALLINI—WILL YOU PLEASE STOP THAT MONKEY BUSINESS?"
YES, MABEL, WE'RE GOING TO THE MASQUERADE BALL, YOU SHOULD SEE HENRY—HE'S SUCH A CARD!
"I KNOW THAT I'VE ASKED THE OPERATOR 5 TIMES TO CHANGE THE NUMBER I WANT—BUT ISN'T IT A WOMAN'S PRIVILEGE TO CHANGE HER MIND?"
"INSTEAD OF SEEING BILL AT NOON I'D RATHER TALK TO HIM OVER THE TELEPHONE—HE USUALLY EATS ONIONS FOR LUNCH!"

XUM

control of a special Defense Labor Board. Military authorities at Washington, alarmed over the possibilities of subversive influence on labor controversies in aircraft factories and other places would like to have such amendatory legislation passed at this session. But Congress is understandably timid about tackling such legislation before the November election.

Organized labor as a whole would probably not take kindly to the idea. Both the AFL and CIO regard the National Labor Relations Board as the working man's Magna Charta. They have developed a rather human astigmatism with respect to its effects. They look upon any suggestion for amending it with suspicion if not outright hostility.

But this much is certain: Military authorities will not stand for any monkeyshines of the "sit down" or "slow down" variety in vital defense industries. The responsibility for rearming the United States is too grave. They look upon these devices as worse than an actual walkout strike, which is after all only the exercise of an honest and traditional right of a workman to lay down his tools and walk out when he is not satisfied with his employment.

The "slow down," and "sit down" strikes are more obstructing because the dissatisfied worker remains at a post where a willing worker could be substituted. It is quite likely that, when the amendatory legislation referred to is introduced next year, it will cover telephone, telegraph, and other utility industries which are generally looked upon as vital parts of the national defense system.

THE FCC has virtually served notice that it is driving towards a generally uniform long distance telephone toll set-up in the United States. The commission has already encouraged and collaborated with a number of state commissions which have cut down Bell System intrastate toll rates to the level of interstate toll rates.

Now it becomes apparent that the FCC is not going to permit even geographical differentials in interstate toll business handled between Bell companies as distinguished from the general rate structure of the Long Lines department. This was seen in the proposed report adopted by the FCC last week which would require Pacific Telephone & Telegraph interstate rates to be cut to the level of the long distance rate charged by the A. T. & T. long lines. These Pacific Telephone & Telegraph interstate rates were found by the FCC in the proposed report to be about 20 per cent higher than the A. T. & T. long lines. This, according to the report, is unjust, unreasonable, and discriminatory.

The findings grew out of an investigation which resulted from a complaint of the Washington Department of Public Service. The investigation was conducted by Commissioner Paul A. Walker in joint proceedings with the Washington commission and the state commissions of California, Idaho, Nevada, and Oregon.

In adopting the proposed report by Commissioner Walker, the commission found that "there is no difference in conditions which justifies the maintenance of a higher scale of rates on interstate Pacific business" than in "other interstate" scales for like services for equal distances under practically the same conditions. The "interstate Pacific" schedule, according to the report, results in higher charges for a shorter than for a longer distance over the same airline route.

"Interstate Pacific" business refers to traffic both originating and terminating in Pacific territory, while "other interstate" business means communication with outside territory, either originating or terminating in Pacific territory. The "interstate Pacific" tolls are the same as in the "other interstate" schedules up to 42 miles out but are generally higher for other distances.

The report points out that operations of the Pacific Telephone & Telegraph System as a whole have been very profitable. During the last 15 years the net earnings ranges from 5.44 per cent to 7.63 per cent of the average net book cost of telephone plant.

MIDDLE GROUND

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

TEMPER MAY BE classed under two headings: *Good* and *Bad*. "Good temper," said Washington Irving, " like a sunny day, sheds a brightness over everything; it is the sweetener of toil and the soother of disquietude."

Mary Jones was like that. She was "the sweetener of toil," and "the soother of disquietude." Nothing seemed to disturb her. We used to wonder about that, too, because if ever there was a family that lived at cross purposes, it was hers.

After bickering and quarreling until their children were all grown up, her father and mother separated; and then they started quarreling over the children.

Mary was the only one of the six children who did not take sides; rather, she tried to be "the soother of disquietude." She did not take sides with one parent or the other. Rather, she took the middle ground.

People like Mary are unusual, I think. But when we meet them —whether in business places, homes, or wherever else—their good temper is the "Sweetener of toil and the soother of disquietude." They may not be able to do much, but they surely brighten up the corner where they are. And if there could only be more of them in a given place, this world would be better and happier.

Again quoting Washington Irving, but this time about bad-tempered people: "A tart temper never mellows with age; and a sharp tongue is the only edged tool that grows sharper with constant use."

People possessed of bad tempers are indeed numerous. We find them in business places, homes, and wherever else we happen to be. We feel sorry for them, and doubly sorry for the people who are obliged to associate with them.

But, why are we sorry for them? Because few things are more bitter than to feel bitter.

MORAL: "Good sense and good nature are never separated, and good nature is the product of reason. It makes allowance for the feelings of others."

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HUMAN RELATIONS

Influenced by Many Factors

By GORDON SAND

THE TELEPHONE INDUSTRY is believed to head the list for good human relations. The very service rendered is so personal that it inspires individualized attention and employe cooperation. Inner thoughts of employes are important to any business. As a rule if human relations are harmonious within the company, contacts outside the company will be satisfactory and impress the public

WE ARE beginning to hear much nowadays of human relations, which is more descriptive than the term "public relations." Too much care cannot be used in selecting the employes who make up the human element in a business; and when a mistake has been made the employer should not be afraid to notify the individual, in justice to him and to the company. A misplaced employe cannot hope to advance in the organization. In that case it is more fair to discuss the situation with him and perhaps guide him in finding another position for which he is better fitted.

Of course, we have another phase of human relations of which we do not hear so much: the superiors or executive officers who are not qualified to be in places of authority, and hence are incapable of directing the employes beneath them. Perhaps they have the ability, but they lack the human understanding and personality to inspire loyalty and cooperation from the employes. If human relations within the company are harmonious, contacts outside the company will be satisfactory.

The much-talked-of "public relations" are not that at all, in my opinion. What has been taken for public relations is simply the thousands of employes rebelling against poor superiors who are in many cases stagnant on life's conditions. No small part of human relations is a problem of the home—improperly contracted marriages, discordant home life; most homes have some, little or much. Take one annoyed person at home and mix him with inharmonious co-workers, plus a superior who attempts too obviously to be just that—and you soon have the beginning of poor public relations.

I have been making a study of my own progress throughout the years. I've carefully checked many of the men who have worked for me—and for whom I've worked. The best men I've worked for, as a whole, have fired me—and I appreciate that. Had I stayed put I'd not be as well-connected as I now find myself. Perhaps it would be for my own eventual good were I fired now, but I like my work and am trying to perform it well.

Looking back over the men I have employed—from plain honest men to college-trained boys—I've found that proper selection and grouping, through using basic facts of the individuals, has made for smooth human relations in nearly every case.

For the last several years I've had no choice in the men under me. Several are more or less at odds with themselves and with their families—with resulting poor relations everywhere they go. Their friendship is not sought after by people, and they are fortunate that their business contacts often do not reveal their inner turmoil.

In one corporation a few years ago I selected some key men. And the place clicks along so smoothly that I wonder at times if my system is an accident, or a fact. That it is a fact remains. Basic application of human psychology created an employe personnel that still generates coordination within and without the organization.

I've checked with organizations in other fields than the one in which I am engaged, and I find that the method of selecting men, in one instance, was exactly the same that I would have used were I to have engaged the same 15 men. The man who engaged them told me he used "hunches" in selections; it is more accurately called a deep perception into a man's character and personal life. Anyway, his crew is almost ideal. The man does a fine business.

To a great extent I find that such selection and groupings can be done by one trained in my plan, through using the regular employes' application blank with some additional checks where there are indications of "off-deportment."

One great trouble is that the heads of corporations are not ready to get down to facts when it involves employes. Lots of men see, and rightly, that improvement in most businesses is limitless from the material end, and they keep right on making it better, materially. But inner thoughts and workings of employes are important. Little is done to pick up the great mass of human relations which has the greatest of all improvement range.

The telephone field is believed to head the list for good human relations. The very service rendered is so personal that it inspires individualized attention and employe cooperation.

Of course, there are a few corporations in other fields which are especially interested in the human side of their employes, and they are getting excellent results. Looking at it from the company's standpoint instead of the employe, the company benefits tremendously in the long run. The good will and loyalty within a happy organization will pay amazing dividends in contacts with the public—who are the customers.

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Prices in the Metal Markets

New York, N. Y., August 19: Copper steady; electrolytic spot, Conn. Valley, 10.87½@11.00; export, f.a.s. N. Y., 9.92½. Tin steady; spot and nearby, 50.75; forward, 50.30. Lead steady; spot, New York, 4.75@4.80; East St. Louis, 4.60. Zinc steady; East St. Louis, spot and forward, 6.50.

a new memb

At Left: Used as a main-line telephone with a special Type 32 compact ringer box, or with any standard C.B. ringer box.

At Right: Unusual mounting requirements, such as shown here, are met by the use of a special bracket for right angle mounting.

Above: The Type 43 Compact Monophone mounts conveniently on the corner of a desk out of the way of pens and papers, yet within easy reach for quick action when needed.

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The Type 43 Compact Monophone is available with or without ringer box and cord, and for either automatic or manual C.B. service. Why not order several? You'll be surprised at the many uses you'll find for them, and the added convenience they will bring to your subscribers. Write for circular and prices—today!

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The Type 43 Compact Monophone is available with or without ringer box and cord, and for either automatic or manual C.B. service. Why not order several? You'll be surprised at the many uses you'll find for them, and the added convenience they will bring to your subscribers. Write for circular and prices—today!

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A CABLEMAN TALKS

Of the Art of Soldering

By JOHN BONERT

THE SECRET of mastering the art of wiping joints lies in patient practice of the various steps. In this second section of a series devoted to cable soldering work, the author describes the preparation of the joint for wiping as more important than the actual wiping. The first article was published in TELEPHONY of April 27

THE PREPARATION of a joint is really more important than the actual wiping. If the surface of the lead sheathing or sleeve is not thoroughly cleaned it cannot be tinned and the joint will not be pressure tight.

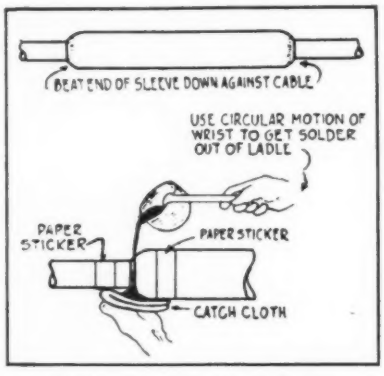
When beating in a lead sleeve it should be beaten in to a gradual curve to conform with the shape of the joint. If this is done, wiping is made much easier, as only a small amount of metal is required and the bottom of the joint is not so apt to drop out. There is also a considerable saving in metal.

Placing the pasters on the cable and sleeve is also important. Whenever possible the paster should be placed an equal distance each side of where the sleeve and the cable sheath come together. This, of course, cannot always be done as, in the case of a large sleeve, where the reduction is so great that more of the sleeve is covered by the joint.

Splice Must Be Held in Rigid Position

One other precaution should be mentioned at this time. The splice must be supported in such a way that it will be rigid when wiping the joints. If this is not done, the joint may sag before it is finished and the result will be a non-uniform joint. If the joint should move when it begins to set or harden, the joint will be porous. At this time a sudden jar will cause the joint to crack. To prevent the sleeve from turning, a few drops of solder are poured on the joint which is to be wiped last.

To prepare for wiping, the most suitable catch and finishing cloths for the size joint to be wiped are selected. A drip pan should be tied under the joint or, if the job is low enough, placed on the floor under the joint. The bottom of the pan is covered with newspaper or cardboard.


BEAT END OF SLEEVE DOWN AGAINST CABLE
USE CIRCULAR MOTION OF WRIST TO GET SOLDER OUT OF LADLE
PAPER STICKER
PAPER STICKER
CATCH CLOTH

Method of wiping the cable joint.

The paper or cardboard will keep the solder that is dropped into the pan from chilling too fast by preventing it from coming into contact with the pan. As the solder that drops into the pan is put back into the pot during the process of wiping, it helps to delay the pot from chilling, if it has been kept in a plastic state. The solder pot should be placed as near the job as possible, so no time will be lost when taking metal from the pot.

The finishing cloth is placed in the pan where no solder will drop on it when heating the joint. As soon as some plastic solder can be obtained it should be placed on the edge of the finishing cloth. This will heat the cloth and make it more pliable for finishing the joint.

Everything needed is now at hand for wiping a round or plumber's joint. The catch cloth is laid on the left hand and held about an inch below the joint. Before starting to pour the metal, it should be stirred, and all foreign matter skimmed off the surface.

Pour Solder in a Circular Motion

A ladle full of solder is now taken from the pot and poured on the joint in a dropping stream. The solder should be poured in a circular motion so as not to pour too long on one spot, which would burn a hole through the sleeve or sheathing. At first the solder will chill as soon as it drops on the joint, but after some pouring it will begin to run off into the cloth.

As soon as enough metal is collected in the cloth it is brought up to the nearest side of the joint and left on top. This is done to prevent burning through the sleeve and sheathing and, if the top of the joint is kept covered, it will help in heating the joint. The cloth should not be rubbed against the bottom of the joint at first because a sharp point of chilled metal may extend and tear the cloth.

Lifting the metal in the cloth up against the bottom of the joint before bringing it to the top is a very efficient method both to heat and tin the bottom. This has the same effect as when one steps into mud. It will be noticed that as soon as one's weight is placed on the mud, the water contained therein will come to the surface.

The same effect is obtained when lifting the metal against the bottom of the joint. Although the metal in the cloth is in a plastic state there is some liquid metal as well as there is water in mud. This naturally brings the hottest metal in contact with the bottom. Each time the metal is brought to the top any surplus over the pasters is wiped off into the ladle, which is held in position to catch it.

This metal should be held in the ladle and more added from the pot to begin pouring again. Continue

XUM

this pouring, allowing the metal to run down the far side of the joint and bringing it up on the near side to the top until the joint is thoroughly tinned.

Make Sure Joint Is Well Tinned

It is a good practice to wipe all metal off the bottom and sides before finishing the joint and looking it over to be sure it is well tinned. The mirror can be used to see under the joint. The top can always be watched when pouring. In this respect it differs from the bottom and does not require a final inspection. Apply a little stearine after inspecting.

After heating and tinning the joint, enough hot metal is held in the catch cloth to insure heat and metal enough to wipe the joint before it reaches the freezing point. The ladle is now placed in the pan and the finishing cloth is brought into play.

With the finishing cloth in the right hand, reach over the top to the far side and with an upward movement of both hands bring the solder to the top. All excess solder over the pasters is now pushed into the catch cloth and brought around to the bottom of the joint. The joint is now rough formed as quickly as possible.

Dropping the catch cloth into the pan the finishing cloth is now grasped in both hands, thumbs on the side of the cloth towards you with fingers on the back. The third finger of each hand is placed near the edges of the back of the cloth. These two fingers apply the pressure on the cloth where it will wipe the edges.

The cloth should be curved to give the joint its proper shape. Now reach over the top of the joint with both hands to the lowest point possible and begin wiping from bottom to top. Care must be taken not to wipe too far forward and pull too much metal off the top.

Next bring the cloth to the side nearest you, this time applying pressure with the index fingers on the cloth where it will wipe the edges, and wipe from the bottom to the top. This wiping is continued until the edges are clean and the joint is of proper shape.

After the bottom and sides are finished the ridge left on the top of the joint can be removed by a light cross wipe. A joint should be finished in as few wipes as possible. Wiping on a joint until the metal has chilled and hardened is very apt to leave the joint porous. The joint will also appear chalky.

When heating the joint on the right side of a splice, some men prefer to reach over the splice with the catch cloth instead of in front, but this cannot be done if the splice is close to a ceiling or wall.

Heating and Tinning of Branch or "Y" Joints

A branch or Y-joint is heated and tinned in the same manner as a round joint, but the crotch requires some additional care. Little attention is paid to the crotch until the joint is well heated. Then the crotch stick or wire is used to cut out the metal that has been worked into the crotch, to allow hotter metal to be packed into it with the crotch cloth. This metal should be cut out and repacked several times, to be sure the under surface of the upper cable forming the Y-joint is well tinned.

If the cables of the Y-joint are side by side instead of one over the other, the joint is called a flat Y-joint, and tinning of the crotch is simplified because the metal can be poured into it. After the crotch has been well tinned and packed and the wiping of the joint has been completed, the crotch wire is used to cut the crotch out so that at least one-eighth of an inch of an edge can be seen; in other words, the crotch should be cut about one-eighth of an inch back of the paster edge.

Never allow the metal of the crotch to extend over the pasters as this covers the edge and is quite likely to hide from view any small hole or untinned spot. Where it is necessary to wipe a branch joint with three or more cables, or in the case of a disk joint, the cables should be tinned before grouping, as there may be some inaccessible places that could not very well be tinned during the process of heating the joint in the manner explained.

The finishing of a joint can be accomplished with one hand, if the beginner cares to learn it, but the two-hand method can be mastered with a great deal less practice. The two-hand method is also favored because the tin is more evenly distributed over the joint. This is brought about by bringing most of the metal to the top of the joint before it is rough formed.

As previously mentioned, this text matter will not teach a beginner to wipe a joint but, if read carefully, it should help him to speed up his progress in mastering the art of wiping. It must be borne in mind that patient practice is the only method that teaches a man to wipe a joint.

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Here and There in the Field

Pioneer Subscriber Values Her Telephone

The Community Telephone Co. of Wisconsin, Black River Falls, recently received a letter from a pioneer elderly subscriber in Downing that adequately expressed the fact that long life and many friends can be made so much more useful and enjoyable with the convenience of telephone service.

The letter, as forwarded to TELEPHONY by R. M. Matteson, vice-president of the Community Telephone Co., reads:

Kind Friends:

This is Ma May writing this note to you. Some people were at my home last evening and we were talking telephone. It has been 35 years since I had my telephone. I was 81 years old the 12th of May; never missed one month that I did not pay my bill. I am a widow, live all alone, and the town thought I had better write to the company. I have not much time to stay on this world, but we think this is quite a record and I would like to keep my telephone to the end.

Please write, Ma May, Downing, Wis.

Mr. Matteson states that Ma May is a dear old lady greatly loved by the entire community and that she is unusual both in personality and period of service. She has learned the secret of growing old graciously and gracefully. "In fact," says Mr. Matteson, "she is young except in years, and her kindness and unselfishness account for the fact that she is so highly regarded by both young and old who know her."

▼ ▼

Ring of Telephone Brings Good News

The ring of the telephone in a home always arouses expectancy among the family. It is a comforting sound, for the telephone means that the family can instantly contact the outside; it affords protection, sociability, and a dependable means of carrying on business activities.

A striking example of the telephone's value occurred last week. A farmer, Edward Auch, living about nine miles from Scotland, S. D., has been a subscriber of the People's Telephone Co., Inc., for nearly 18 years and has always paid his bills. But like many farmers, he has had his share of ill luck. In the spring, crops were badly damaged by driving hail, and this summer a strong windstorm destroyed some of the farm buildings.

Thursday evening, August 15, Mr. Auch's telephone rang. He answered it promptly—and then could hardly believe his ears when a voice informed him that $3,700 were being sent him as an award in the "Pot O' Gold" radio broadcast. Although Mr. Auck may have been tempted during the hard depression years to give up his telephone, as many subscribers did, he is grateful

ALICE ORTH, evening operator of the People's Telephone Co., Scotland, S. D., handled a long distance call which brought "best news" of the year to a farm subscriber of the company.

that he sacrificed other things besides the telephone. That was one thing his family wanted to preserve.

As is generally known, on the "Pot O' Gold" program telephone directories are used each week in making an award of $1,000 to a telephone subscriber. Notification is made by a long distance call. If the telephone's ring is not answered or if the subscriber is too slow in responding to its summons, the main part of the award is withheld for the following week's program. Mr. Auck is believed to have received the largest sum presented as a result of the "Pot O' Gold" radio broadcast.

Playing an important role in this unique radio program is the telephone operator. At Scotland, S. D., the long distance telephone call bearing such rich news was promptly handled by Miss Alice Orth, whose photograph appears on this page. She is proud and happy over her part in conveying "good news" to the deserving Auck family, as is also the People's Telephone Co., which operates the Scotland exchange. And F. E. Wheeler, president of the company, is likewise proud of the fast service rendered by the company's operators and especially by Miss Orth on the evening of August 15.

This incident serves to emphasize the importance of telephone service being maintained at the highest possible standard. Throughout each day the telephone transmits messages of happiness, sorrow, misfortune and good news —and each ring of the telephone may change in some respect the contour of someone's life.

▼ ▼

Minnesotan Buys South Dakota Property

The telephone exchange serving Wessington, Highmore and Blunt, S. D., and operated by the Central Electric & Telephone Co., has been purchased by L. J. Ollog, manager of the Lake Region Public Service Co., Waverly, Minn. Mr. Ollog has incorporated the company as the Central West Telephone Co. R. N. Hunt of Highmore, will continue to serve as manager.

▼ ▼

Poles Treated in 1939 Establish Record

Statistics on the number of poles given preservative treatment in 1939, compiled by R. K. Helphenstine, Jr., of the U. S. Forest Service, in cooperation with the American Wood-Preservers' Association, and just released, show a 31 per cent increase over those treated in 1938. In 1939, 4,634,793 poles were treated, the largest number ever reported in any single year. This compares with 3,545,077 in 1938, an increase of 1,089,716 poles.

More than 78 per cent of the poles reported were given a full-length pressure treatment. From the standpoint of number treated, southern pine ranked first with 3,562,295, the largest number ever treated in any one year and comprising 77 per cent of all poles treated. The increase in southern pine poles amounted to 42 per cent over those treated in 1938.

Western red cedar ranked second, with 823,798 poles, of which all but 7,400 were butt-treated—an increase of about 12 per cent; and northern white cedar ranked third with 141,156 poles treated, which is approximately 10 per cent more than the number treated in 1938. The balance of 107,344 comprised poles of lodgepole pine, Douglas fir, Norway pine, oak, chest-

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Kind of Wood	Pressure Treatment (Number)	Non-pressure Treatment (Number)	Total (Number)
Southern pine	3,561,123	1,172	3,562,295
Cedar:			
Western red	7,400	816,398	823,798
Northern white	—	141,156	141,156
Oak	—	33,805	33,805
Lodgepole pine	25,427	4,053	29,480
Douglas fir	14,168	—	14,168
Chestnut	—	5,561	5,561
Red (Norway) pine	2,231	—	2,231
Miscellaneous	22,299	—	22,299
Total	3,632,648	1,002,145	4,634,793

Poles treated in 1939, by kinds of wood and kinds of treatment.

nut, and a few miscellaneous species.

More than 99 per cent of the poles were treated with creosote. The accompanying table shows the species and the method of treatment of all poles reported.

Rural Telephone Lines in South Africa

The Department of Posts and Telegraphs of South Africa constructed an immense network of telephone lines through lonely country districts of South Africa during the past 30 years. Only 50 farmers were linked to towns by telephone at the start, and most of them were in Cape Colony district.

At the end of the Post Office's financial year March 31, 1939, 19,001 subscribers were connected on more than 3,000 party lines. The network spreads over 48,000 miles. At the end of March this year, there were over 20,000 homesteads linked with civilization by telephone.

The service has grown swiftly in recent years. In 1915 there were only 96 lines, in 1925 only 645. The government introduced a party-line tariff in 1912, and farmers clamored for service. But the world war in 1914 delayed progress. When peace came a new tariff was prepared, but it was too expensive to be popular.

Seven years ago the yearly charge for a farm telephone in South Africa was reduced to 7 pounds ($35) for all who were already in the network, and this remains the lowest charge made today. With not more than 10 farmers on a party line, the service is furnished at a loss, it is stated.

But the Postmaster General and Parliament are prepared to face this loss, because of the great value of the farm telephone to people living in isolation. As Colonel H. J. Lenton, the postmaster general, once remarked, the farm line is "a valuable means of promoting and quickening social intercourse among the people."

Until 1920, when South African farms were cut up by comparatively few fences, the telephone lines were routed straight across the countryside. They ran over hills and valleys, seeking the shortest route from point to point. The troubleshooters patrolled the network on horseback.

But in the last 20 years farmers have installed thousands of miles of fence and jackal-proof wire across the veld. The troubleshooters would have had to be steeplechasers to keep up their patrols. Now the telephone engineers string their wires along the main roads whenever they can.

The linemen at one time were sent out on motorcycles, but they found it a killing job. When they were needed most, they found roads flooded and washed away, and they had to fight their way through on bucking "bikes." Now they go out in light trucks with their tools and kits stowed behind them, ready for any emergency.

Usually they have to mend wires that have broken. Sometimes they have to re-erect poles that have come down. One reason why farm telephones in South Africa are so costly is that metal poles must be used; wooden poles would soon be eaten by white ants.

Animals sometimes break links in the network; the Addo elephants knock poles down occasionally. In the Kruger National Park an extensive telephone system is impossible because giraffes break the wires with their long necks and the elephants uproot the poles.

Eavesdropping is popular on these rural party lines, the same as it has been in the United States. It was stated recently in The Star, evening newspaper in Johannesburg, that 4,000 farmers in South Africa are waiting anxiously for the installation of party telephone lines. But the war and the magnitude of the task—12,000 miles of wire and an outlay of £400,000 ($2,000,000) are needed—is causing delay.

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OUR GREATEST opportunities and blessings often result from obstacles that hamper our progress toward personal accomplishment. This address before the annual Illinois traffic conference discusses

Obstacles Along Life's Pathway

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines

WHEN THE California gold rush was in progress many years ago, a young man, unused to any kind of hardships, set out alone in search of gold. Needless to say, as time went on he suffered both mentally and physically. He became low in spirits, discouraged, and body-weary. To make matters worse, he saw mute evidence along the trail of the tragic ending of dozens of other gold-seekers; but he pressed forward. His faithful horse became so footsore it could walk only with difficulty.

One afternoon when man and beast were ready to drop with weariness, to give up, and die in their tracks as many others had done before him, the horse stumbled over a small obstacle and nearly fell. Fearful that his horse was dying, and that he would be left alone in the wilderness to be the prey of wild animals or hostile Indians, the man quickly dismounted. He picked up the obstacle that had caused the horse to stumble and was about to toss it to the side of the trail, when something about it drew his attention.

"*Gold,*" he breathed. "Blackie, you and I will camp here until I investigate."

If you have heard this story, which is a true one, you know that this man discovered one of the richest gold mines not far from where the horse stumbled over the obstacle. Thus interruptions may sometimes be our greatest blessings.

That small obstacle lying in the road had no doubt been stumbled over time and again by other exhausted gold-seekers whose eyes and minds were turned always and only in the direction of the far west gold fields. But none of them had stooped to pick up the obstacle and examine it. Likely, some cursed it for hindering them.

Think of the hardships, heartaches, and the long journey toward the west which many of them might have been saved if they had paused long enough to examine this obstacle. Even if some of them did, they had thrown it down as worthless—just another piece of rock.

In overcoming obstacles that stand in the way of a person's realizing his ambitions, MISS BARNES points out the dangers of hate, fear, jealousy and prejudice. These things poison the mind and prevent constructive thinking and progress.

This teaches us the valuable lesson that many of our hindrances are shot with the gold of better understanding of what lies before us. If we are not sure we should take time out to make sure of the meaning of the hindrance before we proceed.

One person may be overcome by a small hindrance while another, having equal opportunities, easily overcomes like hindrances. The difference between two such people being that one gives up without trying hard and long enough, the other, instead of giving his whole attention to fear of the obstacle looming before him, tries to discover a way to understand, or circumvent it. Even though he does not succeed, he will be better off than if he had not tried.

Someone has said: "He that wrestles with us strengthens our nerve and sharpens our skill."

Two men of the same age, living in the same city but unknown to each other, were seated in their homes the evening of their 70th birthday anniversaries. One was a night watchman for a large industry, and the other a wealthy railroad magnate.

It was the twilight hour. When one is alone at that hour, on such occasion, he is prone to look back across the years in retrospect, to live again among his memories. It would be a charmed life indeed that had only happy, peaceful memories to recall from life's back pages, after 70 years of living in this complicated old world. And these two men had not lived charmed lives.

So their memories on this 70th birthday anniversary were both happy and sad; indeed, some of them tragic. There were those of accomplished achievements, and of undone things which might easily have made a life better, bigger, and happier, if—, if—. These "ifs" and a lot of other reflections happy and sad, came trooping over the screen of each man's memory; but the "ifs," with an accusing finger, seemed to trouble one man more than the other because there were so many of them. He was the night watchman.

Not that being a night watchman at the age of 70 necessarily meant his life had been a failure. He might have had the making of a more successful man but due to situations which seemed beyond his control, he had not been able to carry out his ambitions. Ordinarily, the man who finds himself drudging for a living at the age of 70, has not made the most of his opportunities before that time.

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Be that as it may, on this particular evening the night watchman sat alone in the little home of his boyhood days, a house which had grown shabbier with the passing years. The fireplace furnished the only light in the room. A peaceful setting, but the mind of the man was not peaceful.

Many Opportunities Are Missed Along Life's Way

As he sat there, looking back across the years, he realized that most of the obstacles which had prevented him from getting ahead in the world were not really such barriers as they had seemed to be at the time. Many of them which once appeared like mountains to be climbed now appeared not more than clods. The road he had traveled, which he had once thought so full of obstacles, seemed fairly level this night.

He realized, as never before, how he might have achieved his ambitions in the days of his youth, but now those many doors of opportunity were closed to him. It was too late to try to open any of them now. He must just plod along. He was an old man, alone in the world, with his productive years behind him or years that should have been more productive, he told himself, as he banked his fire, picked up his hat and lunch box, and went down to his night watchman's job at the factory.

Someone has said that "The life of every man is a diary in which he means to write one story, and writes another, and his humblest hour is when he compares the volume as it is with what he hoped to make it."

The other man sat alone, too, in the library of his beautiful mansion. When he was a young man he lived in a shabby little cottage about like that of the night watchman's. He had had an even more drab start in life than the other man. His father died before he could finish a grade school education, and so it fell on his young shoulders to go to work in order to help support his mother and five younger brothers.

Although the work was not what he would have chosen he was sensible enough to know that, until he was trained to perform the type of work he preferred, he would make himself like the work he was doing. So this work became a stepping stone toward the vocation to which he later devoted his most successful years.

Strange as it may seem, as he looked back over the years in retrospect, his thoughts were chiefly concerned with the happenings which occurred during the lean days of his years rather than of his successful money-making years.

As he stroked the head of the great beautiful dog that lay at his feet in front of the fireplace, his thoughts were not of that dog but of a bright-eyed little mongrel of his boyhood days. Always waiting and wagging his welcome no matter how slim his fare, if any. He was remembering, this night, how heart-broken he was when his dog was shot by the town's bully, a boy who was feared by every child in town.

He thought he could never be happy again without the dog, and he hated that boy who always got by with his father's protection, no matter what meanness he committed. But with the passing of the years, the boy's grief for the dog's vicious killing mellowed until he retained only a treasured memory of the dog which was never crowded out. His first intense hatred of the young bully might have proved to be a great obstacle later in life; but he decided the boy was of no importance to anyone in the community, so why should he make his dislike for the young bully an obstacle of annoyance every time he met him.

He could not have believed it as a boy, but he was to see the day when pity overcame the obstacle of dislike he felt for the young bully. He paused in his reflections this night to pity him.

Obstacles are often invisible to the eye. They are mind obstacles, and the way to overcome most of them is to ignore their existence. Then they will shrink to nothing in importance.

However, some obstacles of this sort are difficult to cope with. I am thinking of jealousy. If we find ourselves inclined to be jealous of another person, we should realize we become an obstacle in the progress of that person and certainly hamper our own progress.

Jealousy is difficult to conceal, and it grows bigger and bigger the longer we harbor it. The bigger it grows the more difficult it is to overcome. Jealousy sees things always through magnifying glasses, which show little things big, dwarfs giants, suspicions truths, all horribly distorted.

Fear is an obstacle—mostly panic—which blocks progress for many people. But people who are unafraid of even their own mistakes try to discover the reason for them

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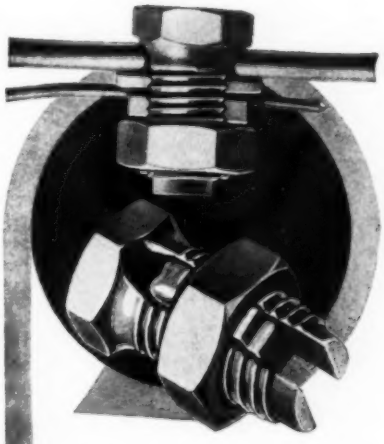

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and profit by seeking to overcome them. This is so much better than trying to arrive at a conclusion under uncertainty.

Another obstacle many people have to combat is prejudice. Prejudiced people form an opinion without weighing facts or considering probabilities before obtaining sufficient material to form a correct opinion. Prejudice means pre-judging. Maybe we all do that to some extent.

I am reminded of a frail young girl who applied to me many years ago for a position as operator. She had a spinal curvature, the result of carrying heavy baskets of laundry. We would not consider employing a girl so afflicted in the present day. But I did her. What an obstacle she had to circumvent. Telephone work seemed to be the only thing she physically could do as her deformity constantly reminded her that her body could endure just so much.

I have always been proud of her record as operator and chief operator. She was the finest chief operator I have ever known. Efficient, painstaking, punctual, regular in attendance, beloved by her operators and admired for her spirit and courage.

When one can overcome, so gloriously, such an obstacle as hers, there is no excuse for failure.

MORAL: "The greater the obstacle, the more glory in overcoming it."

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Minnesota District Conference in New Ulm

The Minnesota Telephone Association will hold a district conference in the Turner Hall, New Ulm, on Thursday, August 29. Among the subjects scheduled for discussion are accounting, maintenance, construction, traffic, rural electrification and wage and hour problems.

Secretary J. C. Crowley states that officers and directors of the New Ulm Telephone Co. are prepared to extend a hearty welcome to all telephone representatives. Managers are also requested to see that one or more of their operators attend the conference, as there will be an operators' school held in the afternoon.

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Obituaries

DUDLEY T. FISHER, Sr., age 80, of Columbus, Ohio, died recently of a heart ailment. A pioneer in many fields, Mr. Fisher in 1879 assisted in the installation of the first telephones in Columbus.

In his memoirs compiled a number of years ago, he recalled the early days of the telephone and of his association with George H. Twiss who secured the Bell telephone rights for Columbus in 1879 and organized the Columbus Telephone Co. Employed by the company in June, 1879, Mr. Fisher received 50 cents for a 12-hour day. He worked from noon to four o'clock p.m. performing miscellaneous jobs and he operated the switchboard from four o'clock to midnight.

In 1898 Mr. Fisher turned to industrial designing and had a prominent part in the designing of the steam heating units which replaced the individual heating stoves in railroad cars. At the time of his death he was supervisor of the patent work of the Jeffrey Manufacturing Co., Columbus.

Surviving are a son, a daughter, two sisters and five grandchildren.

▼

JAMES P. GOODRICH, interested in the Independent telephone industry in Indiana during the past 15 years and World War governor of Indiana,

ANSWERS TO TRAFFIC QUESTIONS ON PAGE 13

1. This entry is written on the back of the ticket. Example: "wh."
2. Yes.
3. Yes.
4. If the calling party voluntarily refers to the canceled call in connection with the handling of a later call having the same details, the report charge is waived. As an exception, a report charge shall not be waived on a canceled collect call, either station-to-station or person-to-person on which the calling or called parties refused to pay for the message, if the customer states that he talked on an inward call.
5. No. The called party should not be paged unless the customer requests the operator to do so.

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died in a hospital at Winchester August 15. He was 76 years old. Death was due to a stroke of paralysis suffered two weeks before.

Survivors include the widow, a son, Pierre Goodrich of Indianapolis, and three brothers. The son also is interested in various telephone companies, and is a vice-president of the Investors Telephone Co.

Noted for his philanthropies, Mr. Goodrich gave virtually his vast fortune to Wabash and Hanover colleges in Indiana, to the University of Notre Dame and to religious groups. Long interested in the affairs of Wabash College, he served as a member of the board of trustees many years and was president of the board at the time of his death.

He served one four-year term as governor of Indiana, taking office in 1917 and had been active in Republican politics many years, holding numerous state and national political offices.

Personal Items

DR. CLARENCE L. JONES, of Athens, Ohio, a former president of the Ohio Independent Telephone Association and a director of the United States Independent Telephone Association for a number of years prior to 1937, observed his 70th birthday on August 23. Dr. Jones, who is secretary and manager of the Athens Telephone Co., was "at home" on that day from four until six o'clock and received congratulations and felicitations of many friends in person and by telephone and telegraph.

▼

E. R. LUCKETT, for six years district manager for Western Light & Telephone Co., at Clarence, Mo., has been transferred to the district managership at St. John, Kans. The transfer became effective August 1.

The Clarence district is being combined with the Linneus, Mo., district and **C. V. CHENOWETH,** of Linneus, has taken over the management of this territory. Mr. Chenoweth, who has been with the company 13 years, was the Linneus district manager.

According to officials, the headquarters of the combined districts which will include 28 towns will remain at Clarence.

▼

WILLIAM V. KAHLER has been called from his duties as chief engineer, Chicago area, of the Illinois Bell Telephone Co. to Washington, D. C., to assume important work with the federal government in connection with the country's defense. He is expected to spend the next three or four months in this work. W. H. Harrison, vice-president and chief engineer of the A. T. & T. Co., who was recently appointed director of the construction division of the production department of the National Defense Advisory Commission, requested Mr. Kahler's services.

Prior to becoming chief engineer of the Chicago area of the Illinois Bell in February, 1938, Mr. Kahler was in the operating and engineering department of the A. T. & T. Co. for 7½ years. Before joining the A. T. & T. he was for 5½ years engaged in engineering and plant work with the Illinois Bell company following 2½ years in the Bell Telephone Laboratories.

▼

W. Y. RAMSAY, engaged in the telephone business for almost 40 years and for the past 30 years general manager of the Peoples Telephone & Telegraph Co., Petersburg, Ill., in Menard county, retired from active service recently. He is succeeded by his son, **WILLIAM RAMSAY, JR.**

The elder Mr. Ramsay first entered the telephone business more than 38 years ago, at Bloomington, Ill. Later he served as manager of properties at Oquakwa, Stronghurst and Chenoa, going to Petersburg from the last-named place. There were two companies operating in Petersburg when he went there, and a few years later, when they consolidated, he became general manager.

In addition to his duties as general manager of the telephone company, Mr. Ramsay has found time for numerous outside activities, notably as secretary for many years of the Old Salem Chautauqua Association, and of the Old Salem Lincoln League. In addition, he has served as a member of the board of education, and has been active in civic affairs.

William Ramsay, Jr., earned his promotion through years of service with the Peoples company, having served more than 20 years in various capacities. He started with the line crew and worked up through various positions to that of plant superintendent, a position which he had held for several years. The new general manager is active in civic affairs, being a member of the Masonic bodies, the Rotary Club and the American Legion.

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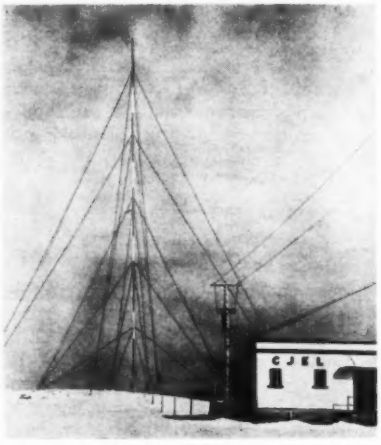
The Manufacturers' Department

Clampless Non-Rusting Guys Support 290-Foot Radiator

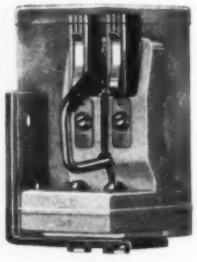
Clampless guys of non-rusting "Copperweld" strand are a feature of the 290-foot "Lingo" tubular steel vertical radiator recently furnished and erected for radio broadcasting station CJKL at Kirkland Lake, Ontario, Can., by John E. Lingo & Son, Inc., of Camden, N. J. CJKL is owned and operated by Northern Broadcasting & Publishing Ltd. of Canada.

CJKL's radiator is guyed at five elevations, in four directions spaced 90 degrees apart. The guys at the two upper elevations are ⅜-inch high-strength Copperweld strand having a rated breaking strength of 11,440 pounds. Guys at the three lower elevations are ½-inch high-strength Copperweld strand having a rated breaking strength of 16,890 pounds.

No guy clamps or wire rope clips are used on any of these guys. Guy attachments to the tubular radiator, to the anchors, and on both sides of strain insulators are made by means of served connections. These served connections develop the full breaking strength of the guy strand, and the thick welded-on copper covering of the Copperweld wires does not flake, crack, or peel during serving, it is stated.



294-ft. high base insulated "LINGO" guyed tubular steel vertical radiator at Radio Station CJKL, Kirkland Lake, Ontario, owned and operated by the Northern Broadcasting & Publishing Co., Ltd., of Canada.



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Machine for Soldering Small Parts

A spot-soldering machine has recently been placed on the market designed for use where small parts are to be soldered and especially where it is necessary to hold the two parts together while the solder is applied.

The soldering copper is held upright by an arm of the treadle-operated machine and is advanced straight downward to the parts to be soldered. The solder is fed forward from a spool as the iron returns from the work. A feed tube can be adjusted to guide the solder to the desired point and the feeding of the solder may be exactly regulated.

The contact of the soldering-iron tip with the work is cushioned by spring suspension. Complete information regarding the soldering machine may be obtained from the Electric Soldering Iron Co., Inc., Deep River, Conn.

New Flexible Tubing for Insulating Wires

The Irvington Varnish & Insulator Co., 20 Argyle Terrace, Irvington, N. J., has recently introduced a new tubing known as Irv-o-lite XTE-30. This new type tubing, extruded from a flexible plastic, is said to be good for any place where bare wires have to be covered.

Unlike former tubing, which was limited to comparatively short lengths, this tubing can be furnished in any desired lengths and is easily snipped off with scissors or knife.

Among the important features of the tubing is that it is said to have excellent flexibility at all temperatures down to four degrees F. It is also claimed that the tubing can be cut, stretched or flexed on itself with wires inside without cracking.

A folder describing the tubing may be obtained by writing the Irvington Varnish & Insulator Co., 20 Argyle Terrace, Irvington, N. J., and requesting a copy of folder No. 06-130-1.

Stromberg-Carlson Sales Representatives Shift Territories

Three personnel changes in the sales force of the Stromberg-Carlson Telephone Mfg. Co. have been announced by Ralph Barger, telephone sales manager.

W. F. Pfaender, former sales representative in Illinois, has been made telephone sales manager of the Stromberg-Carlson Chicago branch. Other changes include the appointment of L. A. Rubindall to cover the Wisconsin district in place of C. H. Knapp who has been transferred to the Illinois area.

COLBY H. KNAPP (left) and W. F. ("JIM") PFAENDER, Stromberg-Carlson sales representatives, were snapped in their firm's suite at the recent Wisconsin convention. Mr. Pfaender was recently appointed telephone sales manager of the Chicago branch and Mr. Knapp has been transferred to the Illinois area.

XUM

Commission and Court Activities

FCC Claims Pacific Coast Rates Are Unfair

Under an order proposed by the Federal Communications Commission on August 14 the Pacific Telephone & Telegraph Co. would be required to make effective in Pacific territory the interstate rates published for east and west toll traffic by the American Telephone & Telegraph Co. under the $12,000,000 reduction effective January 15, 1937, and the subsequent $5,000,000 reduction effective May 1, 1940.

The company has 20 days in which to file exceptions to the commission's proposed report and to request oral argument on it.

The "interstate Pacific" scale of telephone rates is unjust, unreasonable and discriminatory, the FCC declared as a result of its investigation of charges and practices of the Pacific Bell and its subsidiaries applicable to interstate service growing out of complaint filed by the Washington Department of Public Service.

In adopting a proposed report by Commissioner Paul A. Walker, who conducted the inquiry, the commission finds that "there is no difference in conditions which justifies the maintenance of a higher scale of rates on interstate Pacific business" as defined in the "interstate Pacific" scale than in the "other interstate" scale for like services for equal distances under practically the same conditions.

The "interstate Pacific" schedule, according to the report, results in higher charges for a shorter than for a longer distance over the same airline route. Deeming that the situation violates Sections 202 (a) and 205 of the Communications Act, the commission proposes that the company readjust the "interstate Pacific" rates to conform to the "other interstate" scale, as was the case for periods prior to January 15, 1937.

"Interstate Pacific" business refers to traffic both originating and terminating in Pacific territory, while "other interstate" business means communication with outside territory either originating or terminating in Pacific Bell territory. The "interstate Pacific" tolls are the same as in the "other interstate" schedule for distances up to 42 miles, but are generally higher for greater distances.

The testimony of one witness, the FCC stated, is typical of a class of users which is discriminated against by the maintenance of an "interstate Pacific" scale higher than the "other interstate" scale. This witness is in the trucking business. His customers at points in southern California are in competition with producers of similar commodities in the territory east of that served by the Pacific Bell. Charges for long distance services furnished to this witness under the "interstate Pacific" schedule are said to be about 20 per cent higher than they would be under the "other interstate" schedule. To quote the report:

There is no justification for the present set-up of different levels of interstate message toll telephone rates in the United States, unless we accept the premise that the parent American Telephone & Telegraph Co. is free arbitrarily to select its groups geographically,

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No Moving Parts
No Vibrating Contacts
No Routine Maintenance
No Radio Interference

In Use Throughout the Communication Field

5 Models Available

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physically or otherwise to which it will apply different levels of rates based upon its conclusions as to the relative density of population, etc., within the groups thus carved out.

If we asume that the Pacific system is an independent operating entity receiving only advice from the parent company, it is the grossest sort of discrimination for this entity to maintain two levels of interstate rates, especially when the lower level, due to arrangements with the parent company, is a less profitable portion of its interstate business than that handled under the higher "interstate Pacific" scale. Under these circumstances it may well be said that the interstate Pacific scale is not only discriminatory but also unjust and unreasonable.

The report points out that operations of the Pacific Bell, as a whole, have been very profitable. During the last 15 years, its net earnings ranged from 5.44 per cent to 7.63 per cent of the average net book cost of telephone plant and equipment, and the record indicates that future earnings will produce a higher rate of return than the average for those 15 years.

Territory served by the company directly or indirectly embraces the states of Washington, Oregon, California, Nevada, and that portion of Idaho generally north of the Salmon River. The wholly-owned subsidiaries involved are the Bell Telephone Co. of Nevada and the Southern California Telephone Co.

The Washington Department of Public Service June 28, 1939, filed a complaint about rates to and from points in that state. The commission, by its own motion, on August 8 of that year, instituted investigation of the interstate rates of the entire Pacific territory. Commissioner Walker presided at hearings in Seattle and San Francisco last winter.

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New York Bell Reduces Intrastate Tolls

The New York Telephone Co. will soon file new intrastate toll rates resulting in an annual savings of about $706,000 for its patrons, the New York Public Service Commission announced August 11. The new rates will bring the company's toll charges more nearly in line with the interstate rates charged by the American Telephone & Telegraph Co. within the state.

The reductions will affect mileage service of 40 miles and over. They will range from 5 to 15 cents a call, depending on distance. Under existing rates the New York Telephone Co. charges from 5 to 25 cents more than does the American Telephone & Telegraph Co. for the same distances in interstate service.

Commissioner Neal Brewster insisted that there was no justification for the wide spread between the rates charged by the two companies for toll calls within the state involving the same mileages. In permitting the New York Telephone Co. to file the new rates the commission has reserved the right to take further action with respect to these toll charges in the future.

CHARACTER KEEPS US ALIVE!

You cannot discount the economic situation, and you cannot forget the changes that have been made by the machine; you cannot forget that we are living in a transitional age—and we must not, we dare not forget that it was character that sustained people throughout the ages.

The lack of character killed Egypt, killed Greece, killed Rome. The lack of character was the cause of the breakdown of the nations before the French Revolution. Lack of character destroyed Europe.

Character keeps us alive to this day, and we may well thank our stars that there were wise and great souls who had the character to found a nation that has resisted the pitfalls of time for over 150 years. And in thanking them, perhaps we should dedicate our own hearts and lives to the continuation of that character that shall sustain us here in the days to come.—DR. CHARLES E. SHULMAN, Rabbi, North Shore Congregation Israel, before The Executives' Club of Chicago.

▼ ▼

To Contest Tax Levy on Telephones in Homes

The New York Telephone Co. "definitely intends to fight," up through the courts, the unexpected attempt of the city of Syracuse to list as taxable property of the company telephone equipment in private homes and in other places not owned or leased by the company, it was stated recently.

Another far-reaching piece of litigation was seen as likely to arise from the city's action in levying a $700,000 assessment on the 1941 rolls to cover all such apparatus not on company property, along with a duplicate $700,000 item made retroactive to 1940.

The two $700,000 items covered "station apparatus, station installations and private branch exchanges on private property not owned or leased by the telephone company."

The total valuation on property of the company in Syracuse—exclusive of special franchise valuations which are fixed by the state—has been increased nearly $2,000,000 to $4,037,575. The

XUM

increase will be reduced to about $1,300,000 on the 1942 rolls, with the "retroactive" item out.

An understanding is said to have been reached whereby the company will not challenge the amount of any of the present assessment figures, and the city in turn will not alter these figures during the present administration.

The company, however, specifically reserved the right to contest the legality of the levy against equipment on outside property, and the $700,000 "omitted property" item put in to cover 1940.

A closed issue is the big $1,716,000 levy on central office equipment, as a result of a recent court of appeals decision sustaining the city's right to tax this equipment, which the company maintained was not actually part of the realty.

The city in its pioneer levy hitting even the wires leading into private homes and the telephones at the end of them, is basing its action on a finding in the opinion written by Associate Judge Edmund H. Lewis of the court of appeals while he was on the appellate division. The court of appeals later affirmed the lower court decision without comment.

The telephone company challenges this interpretation of the opinion, claiming it does not say that the city can tax the company for the telephone in a private home.

Summary of Commission Rulings and Hearings

Alabama Public Service Commission

August 6: Alabama Telephone Co. authorized to install automatic dial telephone systems in Aliceville and Carrollton and a common battery system in Fayette. New rate schedules were also approved.

Indiana Public Service Commission

August 14: Monon Telephone Co. authorized to issue $25,000 in 15-year, 4½ per cent notes to the Lincoln National Life Insurance Co., Fort Wayne. The money will be used to convert the exchange from manual to automatic service.

Kansas Corporation Commission

September 9: Hearing on application of the East Kansas Telephone Co. for authority to make certain changes in its rates for local exchange service in various communities.

September 9: Hearing on application of Gridley Telephone Co. for new schedule of rates.

September 16: Hearing on application of Southwestern Bell Telephone Co. for permission to file and put into effect a new schedule of rates in Sedgwick and vicinity.

Missouri Public Service Commission

August 12: P. Kerr Higgins, operating as Fidelity Telephone Exchanges, applied for authority to file schedule of rates for telephone service in New Haven, Franklin county.

Nebraska State Railway Commission

September 12: Hearing in Red Cloud on application of Farmers Telephone Co. of Red Cloud for an increase in switching rates from 50 to 75 cents a month, based on the fact that compliance with federal Wage-Hour Law has made the present rate non-compensatory.

New York Public Service Commission

August 6: Hearing held in New York City on application of Warwick Valley Telephone Co. for authority to increase rates in Warwick.

John E. Barry, the company's secretary and treasurer, said that the company's net income was now only $7,371 a year or 4.76 per cent on an investment totaling $154,729, and that the income should be $9,185, or 5.93 per cent. He stated the company had installed dial systems at Florida and Pine Island and was now installing similar systems for all subscribers outside the village of Warwick.

Present rates have been in effect since 1924 in the Warwick and Pine Island territory, and since 1927 in the Florida territory. Taxes for 1931, 1932 and 1933 averaged $3,381, and at present amount to $6,059.

Ohio Public Utilities Commission

August 12: The Clinton Telephone Co. applied for authority to file new rules and regulation providing that subscribers have no priority right in exchange appellations and numbers.

August 15: Greenfield Telephone Co. authorized to file new rules which provide that subscribers have no priority rights to exchange appellations and numbers.

August 14: Pleading that a substantial majority of the subscribers have agreed to the increase, the Ohio Bell Telephone Co. applied for authority to revise its rates at Murray City upon the conversion of the exchange to automatic dial service, and, because of non-use, permission to discontinue free service to the Glouster exchange of the Union Telephone Co. The proposed rate changes are:

Business independent line, $2.50 to $4.00; business two-party, $2.00 to $3.25; business rural, $1.50 to $2.75; residence independent, $1.75 to $2.75; residence two-party, to be discontinued; residence four-party, $1.25 to $2.00, and residence rural, $1.25 to $2.00.

August 15: The Ohio Bell Telephone Co. given authority to transfer limited territory from Kirtland exchange to its Willoughby exchange.

August 17: Mansfield Telephone Co. given authority to issue and sell at $23.25 per share, 13,313 shares of no par common stock to provide for the reimbursement of its treasury for $309,521.96 uncapitalized, capital expenditures as of August 31, 1939.

Oklahoma Corporation Commission

September 10: Hearing on application of the Oakwood Telephone Co. for authority to increase rates for multi-party telephone service at Oakwood.

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THE COMPANY
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PURCHASING AGENT
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Lineman's Favorite
58-R—8½" —$3.25
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Lineman's or company name etched FREE on handle of each pair.
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He puts into the hands of the lineman and electrician pliers that add to their efficiency and speed—
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Write for Catalog of complete line and ask us to quote prices on six or more pairs of lineman pliers, in sizes desired.
Made by the FORGED STEEL PRODUCTS CO. Newport, Pa. — and made RIGHT!
Vacuum Grip Pliers
OVER A MILLION AND A QUARTER IN USE

Use of Wheatstone Bridge for Location of Cable Faults (Ctd.)

Note: If the resistance of the bad wire should be greater than the resistance of the good wire, G_1, then a balance could not be obtained and it would be necessary to reverse the connections of the good and bad wires on bridge posts X_1 and X_2. If the bridge can be balanced with the good wire, G_1, on post X_1 and the bad wire on post X_2 (the normal connection), then any X_3 reading obtained means that the good wire is higher in resistance than the bad wire. If it is necessary to reverse the connections in order to get a balance, then the bad wire is higher in resistance than the good wire.

STEP NO. 2: Next determine the loop resistance, RL, of the good wire, G_1, and the bad wire. This can be done by converting reading R_3, previously made, to a true resistance reading; that is, reading R_3 multiplied by the ratio dial setting, RL = R_3 x ratio dial setting. Having obtained the difference in the resistances of the good and bad wires and the loop resistance, the fault location readings, X_1 and X_2, previously obtained should be compared with the bad wire resistance, i.e., X_1 plus X_2 should equal RL/2 plus or minus X_3 (difference in resistance).

As has previously been mentioned, it is desirable for anyone who uses the Wheatstone bridge to understand the exact action which takes place with whatever method that may be used. With this in mind let us analyze the values obtained in a typical three-Varley problem.

Assume that we have a ground fault on a No. 24 gauge telephone cable and wish to locate this fault by the three-Varley method. The readings obtained in each case and the computed results are given below:

Varley reading R_1 = 900 ohms.

Varley reading R_2 = 1,450 ohms.

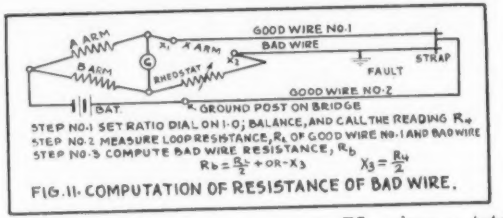
Resistance from strap to fault, $X_1 = 0.0909\ (R_2\text{-}R_1)$ or $X_1 = 0.0909\ (1{,}450\text{-}900) = 50$ ohms.

Varley reading, R_3 = 2,000 ohms.

Resistance from bridge to fault, $X_2 = 0.0909\ (R_3\text{-}R_2)$ or $X_2 = 0.0909\ (2{,}000\text{-}1{,}450) = 50$ ohms.

"Telephony's" Engineering Data
By B. C. Burden

Index, General.
August 24, 1940.
No. 52-A, Page 22.


A ARM
X ARM
GOOD WIRE NO.1
BAD WIRE
B ARM
RHEOSTAT
FAULT
STRAP
BAT.
GOOD WIRE NO.2
GROUND POST ON BRIDGE
STEP NO.1 SET RATIO DIAL ON 1.0; BALANCE, AND CALL THE READING R_3
STEP NO.2 MEASURE LOOP RESISTANCE, R_L OF GOOD WIRE NO.1 AND BAD WIRE
STEP NO.3 COMPUTE BAD WIRE RESISTANCE, R_b
$R_b = \frac{R_L}{2} + \text{OR} - X_3$ $\quad X_3 = \frac{R_4}{2}$
FIG. 11. COMPUTATION OF RESISTANCE OF BAD WIRE.

A loop resistance measurement, RL, gives a total of 200 ohms.

A Varley reading of the good and bad wires, using a ratio of 1.0, gives zero resistance. Hence, X_1 plus X_2 = RL/2 plus or minus the difference in resistance between good and bad wires = 200/2 = 100 ohms.

In other words, our computations show that the two locations obtained check with the overall resistance of the bad wire; hence it can be assumed to be accurate.

Now let us examine the foregoing computations on a schematic diagram and see why these readings resulted from our several measurements. Referring first to Fig. 12, it will be seen that on our first test (Varley No. 1) we have in the X arm of the bridge the resistance of the good wire, G_1, which in this case is 100 ohms. In the R arm of the bridge we have the resistance of the bad wire, which is also 100 ohms. Now if a ratio dial setting of 0.1 is used, we will need to have 10 times the resistance in the R arm as we have in the X arm in order for the bridge to balance.

Actually, a balance was found when 900 ohms were cut into the rheostat. This 900 ohms with the 100 ohms of the bad wire will give us 1,000 ohms in the R arm of the bridge, and this is 10 times the resistance in the X arm; hence the bridge will balance. It should be appreciated that reading R_1 itself does not tell us anything except when combined in an equation with reading R_2.

Next connect the ground post to ground and take another reading, called R_3, and this turns out to be 1,450 ohms. As Fig. 12 is studied we can see that in taking reading R_3, and feeding battery in at the fault, our X arm will consist of 100 ohms of the good wire

"Telephony's" Engineering Data
By B. C. Burden

Index, General.
August 24, 1940.
No. 52-A, Page 23.

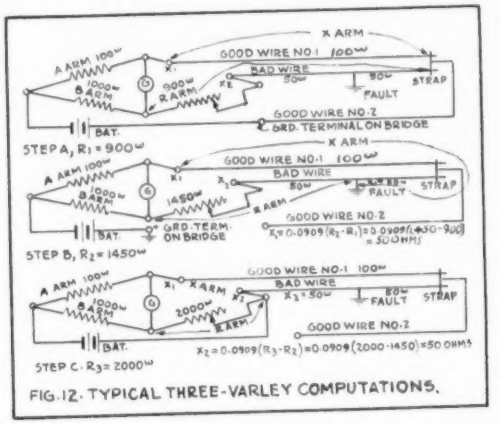


FIG. 12. TYPICAL THREE-VARLEY COMPUTATIONS.

and 50 ohms of the bad wire, while the R arm will consist of 50 ohms in bad wire (fault to bridge) and 1,450 ohms in the rheostat. This makes a total resistance of 1,500 ohms, which is exactly 10 times the resistance in the X arm.

Now the equation $0.0909\ (R_2\text{-}R_1)$ merely reconciles any difference in resistance which may exist between the good and bad wires and at the same time gives the true value of resistance from the strap to the fault.

Considering next Varley measurement No. 3 as pictured in Fig. 12-C, it is noted that this connection of the bridge results in what amounts to taking a straight measurement of the loop resistance of good and bad wires although the reading obtained is not actually converted to true resistance but is kept in terms of the rheostat setting so that it can be substituted in the three-Varley equations.

The effect of substituting Varley reading R_3 in the equation $0.0909\ (R_3\text{-}R_2)$ is to subtract the resistance of the bad wire from the strap to the fault from the total resistance of the bad wire, thus giving the resistance of the bad wire from the fault to the bridge. This provides a check of the accuracy of the first computation of the strap-to-fault resistance.

A Bit of Correspondence

United States Department of Agriculture
Rural Electrification Administration
Washington

Office of the Administrator

August 8, 1940

Mr. S. R. Edwards
Editor, TELEPHONY
608 South Dearborn Street
Chicago, Illinois

Dear Sir:

Your Washington correspondent, Mr. Welch, in the issue of July 13, has some little fun at our expense. I can easily appreciate that Mr. Welch, like many other hard-working correspondents, is finding Washington a trying assignment these days, and meeting with some difficulty in comprehending problems that require considerable thinking even by experts. The temptation to burst forth in a soaring flight of the imagination is at times irresistible, especially when one has a sympathetic editor.

But it is just possible that a few of your readers might construe his remarks as an attack on the Rural Electrification Administration, and a criticism of its contribution to national defense. Particularly on matters relating to defense, I think they have a right to the facts. The enclosed releases will tell you what we actually said.

Mr. Welch need not take my word for it that decentralization is good for national defense. I think it is, though I would not be dogmatic about it. But people whose job it is to know have suggested that concentrations of industry and transportation are hazardous in wartime, and that it would be advisable, strategically, to decentralize where possible. This view is widely held.

A recently-published report from the Defense Commission espouses it. The President has announced that it was discussed at length in a Defense Commission meeting. Indeed, there is not even a partisan difference of opinion about it, apparently, for Mr. Willkie has declared for breaking up the great concentrations of industry in large cities.

Industries that move out of cities must have electricity. That's where REA comes in—to help to provide for defense industries moving into hitherto unserved rural areas. Mr. Welch need not worry about voltages: our engineers will see to it that the proper voltages are available where needed.

Merely as a suggestion of what could be done, in a recent investigation we found that REA-financed systems were serving 115 types of large-power users—3,500 separate establishments.

With regard to mobile generating plants, Mr. Welch seems to hold the novel belief that they generate power on the fly. Let me assure him that this is not the case. They are in motion only when en route to a point where power is needed in a hurry. They can cope with any sudden demand for power until such time as a permanent plant can be built—if the need is to be permanent. They can, quickly, supply breakdown service, where repairs to a permanent plant might take several weeks. They can supply power to line sections cut off from their power source through failure or destruction of transmission lines. Incidentally, the United States Army has found several excellent uses for mobile generating plants.

In his editorial asides Mr. Welch expresses the belief that, in time of national emergency, we can abandon our efforts to bring to the farmer those electrical conveniences which Mr. Welch, and the rest of us who live in cities, regard as essentials. I can't agree. But the point is irrelevant. What matters is the fact that electrifying farms, certainly beneficial to our agricultural life, also has significance in national defense planning.

Mr. Welch notes that electricity is used to operate curling irons, and so it is. But it also operates chick brooders, feed grinders, incubators, milkers, cream separators, soil-heating cables, irrigation systems, ensilage cutters, soil sterilizers and dozens of other farm machines, all of them actually or potentially of substantial importance.

Therefore, and with due respect for Mr. Welch and his ability to write amusing prose, I will regard it as a great courtesy if you will set forth the true situation yourself or publish this letter, so that your readers may have the record straight.

Very truly yours,

(Signed) Harry Slattery
Administrator

* *

Washington, D. C.
August 13, 1940

Mr. S. R. Edwards, Editor
TELEPHONY Publishing Corporation
Chicago, Illinois

Dear Mr. Edwards:

I have read with interest Mr. Slattery's reaction to my piece in TELEPHONY of July 13. True, Washington correspondents trying to cover too much ground do tend to grow facetious and superficial. And sometimes, hardworking and conscientious administrators like Mr. Slattery may even grow so enthusiastic about their own assignment as to over-estimate its importance in the national picture.

The issue here seems to boil down to a fairly honest difference of opinion. I still submit that strictly from a national defense viewpoint, Federal dollars might be better spent at this time on planes, tanks, ships, etc., than on loans to build farmer co-op power lines. In short, I did not attack the REA program *per se*. I still question its ability to contribute to the national defense.

Offhand, we might observe that REA has no statutory business serving industry at all. Section 4 of the Act restricts REA loans "to persons in rural areas who are not receiving central station service." But if that be legalistic quibbling, let us consider REA's defense possibility on its merits. Mr. Slattery places it chiefly on the ground of "decentralization."

Of course, we are all in favor of "decentralization"—but it is a relative term. In one sense it might mean moving industry out of heavily-congested industrial cities of the East to smaller cities in the South and West. In another sense, it might mean taking industry out of communities entirely and launching them in bare rural back country.

Obviously, "decentralization" from a national defense viewpoint can only mean the former. Because of the time element (we have to get rearmament started *this year*, not one or two or five years hence), substantial defense industrial units must be located in fairly well-established or at least settled communities. That is because such units require not only electric power but a host of complementary services not to be found in any cornfield or cottonfield county. They need railroad and terminal facilities, communications, water and gas supplies, hard highways, housing for workers, accessibility to shipping ports and raw materials, etc.

Where will Mr. Slattery find these in the vast majority of areas served by REA lines? Indeed, it is only in the cornfield and cottonfield country that REA lines can really perform the function ordained for them by

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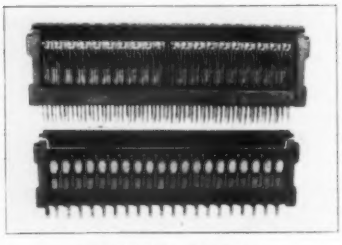

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Congress. I hesitate to believe that Mr. Slattery would seriously press his "decentralization" contention to such extremes. When he can point to an airplane factory, or some other substantial unit (and I don't mean peach canneries, garages, dairies or other "large power" users) taking service over REA lines, I'll sit up and take notice. So will many others.

I plead guilty to overdrawing the picture against REA in my reference to "haircurlers." As Mr. Slattery truly states, rural power does give the farmer many other valuable implements which add not only to his *comfort* but to his *productivity*. This is a necessary distinction. If we are to talk strictly from a national defense viewpoint, the farmer's *comfort* might reasonably be deferred for the present (at the expense of Treasury withdrawals, at least). But the farmer's *productivity* is another thing.

If the nation's food reserves needed to be bolstered, increased farm *productivity* might be a vital and pressing defense factor. What are the facts? Well, the Agriculture Department is still committed to a policy of subsidizing a *curtailment of surplus crops*. In passing, it might be noted that these very crop surpluses are largely the result of overestimated farm production during World War I. That seems to me to be a fairly conclusive answer on that point.

I am sorry I gave the impression that I thought mobile units were able to generate "on the fly." I *do* know better. I also know that, valuable as these units may be for purely local stand-by equipment, they would not be a drop in the bucket to handle the load if any important central stations were blasted out. I also know that REA lines are principally distribution facilities—probably 90 per cent of which *rely for their power on a wholesale supply from central stations* (mostly private power companies). I might even hazard the surmise that the Army can find more effective use for a greater number of these units than the farmer cooperatives. Mr. Slattery, recently-appointed "power consultant" to the National Defense Commission, would know more about that.

There are other items in the REA release which I might fairly challenge on grounds of bona fide national defense, but I have already wandered too far afield to warrant further space in a telephone journal. On that point, I might suggest that if REA wants to do something about protecting the "home front" on the farm, it might look into the matter of affording better treatment for small telephone companies which furnish equally vital communication service to rural communities.

These companies continue to look with concern upon the prospect of having another hundred million invested in rural power line construction under circumstances which, in many instances, will destroy their investment and impair their service without fair compensation.

Very truly yours,

(Signed) Francis X. Welch
Special Correspondent

▼ ▼

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Index to Advertisers

	Page
Acme Visible Records, Inc.	—
American Appraisal Co., The	33
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American Creosoting Co.	—
American Fork & Hoe Co., The	—
American Steel & Wire Co.	6
American Telephone & Telegraph Company	—
Anaconda Wire & Cable Co.	—
Armstrong Cork Co., Whitall Tatum Glass Insulators Dept.	—
Automatic Electric Co.	18-19-21
Automatic Telephone & Electric Co., Ltd.	—
Babcock Garrison	33
Bartlett Mfg. Co.	—
Berry & Co., L. M.	—
Brach Mfg. Co., L. S.	—
British Insulated Cables, Ltd.	—
Buckeye Telephone & Supply Co.	34
Calculagraph Company	—
Carney & Co., B. J.	33
Chance Company	—
Christiansen Co., C. M.	33
Churchill Cabinet Co.	—
Clark, Frank M.	34
Coffey System & Audit Co.	33
Coffing Hoist Co.	—
Columbia Steel Co.	6
Cook Electric Co.	28
Cook's Sons, Inc., Adam	—
Cope, Inc., T. J.	—
Copperweld Steel Co.	—
Cuneo Press, Inc., The	—
Davey Tree Expert Co.	—
Donnelley & Sons, R. R.	30
Electric Storage Battery Co.	2
Everstick Anchor Co.	—
Fansteel Metallurgical Corp.	—
Fibre Conduit Co.	—
Forged Steel Products Co.	31
Fort Wayne Printing Co.	—
Fowle, Frank F.	33
General Cable Corp.	—
General Electric Co.	—
Goshen Mfg. Co., The	—
Gould Storage Battery Co.	—
Graybar Electric Co.	—
Gray Manufacturing Co., The	23
Harter Corporation, The	—
Herdrich & Boggs	33
Highway Trailer Co.	—
Holtzer-Cabot Electric Co.	—
Indiana Steel & Wire Co.	—
International Creosoting & Construction Co.	33
International Harvester Co.	—
Joslyn Mfg. & Supply Co.	—
Kearney Corp., James R.	29
Kellogg Switchboard & Supply Co.	4-5
Kester Solder Corp.	—
Klein & Sons, Mathias	—
Leich Sales Corporation	—
Lenz Electric Mfg. Co.	—
Line Material Co.	—
Loomis Advertising Co.	—
Lorain Products Corporation	30
MacGillis & Gibbs Co.	33
Matthews Corp., W. N.	—
Michigan Pole & Tie Co.	—
National Carbon Co., Inc.	36
National Construction & Engineering Co.	—
National Fireproofing Corp.	—
National Telephone Supply Co.	8
North Electric Mfg. Co., The	35
Owens-Illinois Glass Co., Hemingray Division	—
Paine Company	—
Paragon Electric Co.	—
Partridge Lumber Co.	33
Philco (Battery Division)	8
Phillips Electric Works, Inc.	—
Porcelain Products, Inc.	—
Porter, Inc., H. K.	—
Premax Sales Division, Chisholm Ryder Co., Inc.	—
Raytheon Mfg. Co.	—
Ray-O-Vac Company	26
Rebuilt Electric Equipment Co.	34
Reliable Electric Co.	25
Remington Rand, Inc.	—
Roebling's Sons Co., John A.	27
Schauer Machine Co.	—
Seymour Smith & Sons, Inc.	—
Sloan & Cook	33
Sparta Manufacturing Co.	33
Stewart Brothers	34
Stromberg-Carlson Telephone Mfg. Co.	3
Sturgis Posture Chair Co.	—
Suttle Equipment Co.	—
Telephone Repair Co.	—
Telkor, Inc.	—
Union Carbide & Carbon Corp.	36
United States Steel Corp.	6
Utica Drop Forge & Tool Corp.	—
Utilities Service Co.	—
Valentine Clark Corporation	33
Wagner-Malleable Products Co.	—
Western Electric Co.	—
Weston Electrical Instrument Corp.	7
Westwood Press, The	34
White, Weld & Company	—
Wood Preserving Corp., The, a Koppers subsidiary	—
Wopat, J. W.	33
Wray & Co., J. G.	33

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